

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Tuesday, March 01, 2011 12:45 PM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: Final March 2011 Runoff Forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_Mar2011.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Attached is the updated March 2011 runoff forecast.

[REDACTED]
[REDACTED]
USACE, Northwestern Division
Missouri Basin Water Management Division
[REDACTED]
[REDACTED]@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Mar-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
Values in 1000 Acre Feet									
JAN 2011	(History)	299	120	86	67	273	1,003	1,276	1,276
NORMAL	431	261	12	25	100	40	710	750	750
DEPARTURE	119	38	108	61	-33	233	293	526	526
% OF NORM	138%	115%	998%	346%	67%	682%	141%	170%	170%
FEB 2011	580	457	318	217	236	524	1,808	2,333	3,609
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	220	101	228	168	106	432	823	1,256	1,782
% OF NORM	161%	128%	354%	443%	182%	570%	184%	217%	198%
MAR 2011	(Forecast)	1,328	620	230	253	752	3,050	3,802	7,411
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	325	53	21	47	453	469	922	2,704
% OF NORM	104%	132%	109%	110%	123%	252%	118%	132%	157%
APR 2011	757	1,328	620	170	207	1,129	3,081	4,210	11,621
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	248	139	26	27	769	547	1,316	4,020
% OF NORM	117%	123%	129%	118%	115%	314%	122%	145%	153%
MAY 2011	1,137	1,280	400	147	186	600	3,150	3,750	15,371
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	56	35	88	0	0	308	179	487	4,507
% OF NORM	105%	103%	128%	100%	100%	205%	106%	115%	141%
JUN 2011	1,704	2,740	470	152	178	350	5,244	5,594	20,965
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	92	73	47	0	0	64	212	276	4,783
% OF NORM	106%	103%	111%	100%	100%	122%	104%	105%	130%
JUL 2011	863	1,830	190	57	137	250	3,077	3,327	24,292
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	44	54	11	0	0	32	109	141	4,924
% OF NORM	105%	103%	106%	100%	100%	115%	104%	104%	125%
AUG 2011	353	604	68	39	115	150	1,179	1,329	25,621
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	3	0	0	19	3	22	4,946
% OF NORM	100%	100%	105%	100%	100%	115%	100%	102%	124%
SEP 2011	333	452	111	38	111	110	1,045	1,155	26,776
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	4,957
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	123%
OCT 2011	385	523	66	5	120	86	1,099	1,185	27,961
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	4,965
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	122%
NOV 2011	384	398	67	6	118	83	973	1,056	29,017
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	4,972
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	121%
DEC 2011	329	247	0	12	100	56	688	744	29,762
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	4,976
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	120%
Calendar Year Totals									
NORMAL	7,875	11,487	3,050	1,160	1,828	4,363	25,399	29,762	
DEPARTURE	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
% OF NORM	662	875	676	277	147	2,340	2,636	4,976	
	109%	108%	128%	131%	109%	216%	112%	120%	

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Tuesday, March 01, 2011 10:32 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: 2011 March Runoff Forecast (UNCLASSIFIED)
Attachments: Runoff_Forecast_2011Mar.pdf

Classification: UNCLASSIFIED

Caveats: NONE

The overall calendar year 2011 runoff forecast is 25.4 MAF (112% of normal) above Gavins Point Dam, which is an increase of 0.2 MAF from the February 2011 forecast. The summation above Sioux City is 29.8 MAF (120% of normal).

With regard to March and April runoff, the areas of moderate to heavy snow pack will cause above average runoff into the system. Despite some early snowmelt, an increase in the snowmelt runoff volume is expected in the Sioux City reach due to the additional SWE accumulated in the mid-February snow storm, expected colder temperatures, wet soil moisture conditions and high tributary flows experienced during the winter.

Mountain snow accumulations as a percent of long-term averages are 110% of normal in the Fort Peck subbasin and 108% of normal in the Fort Peck to Garrison subbasin. As a result, the May-July runoff above Fort Peck is expected to be 105% of normal, while the Fort Peck to Garrison reach is expected to receive 103% of normal runoff. All runoff is expected to return to normal above Gavins Point by August 2011, while above average runoff will persist in the Gavins to Sioux City reach.

Please let me know when you are ready to discuss this.

Thanks.

[REDACTED]
[REDACTED]
USACE, Northwestern Division
Missouri Basin Water Management Division

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[REDACTED]@usace.army.mil

Classification: UNCLASSIFIED

Caveats: NONE

Missouri River Basin
Calendar Year 2011
Forecasted

1-Mar-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
Values in 1000 Acre Feet									
JAN 2011	(History) 431	299	120	86	67	273	1,003	1,276	1,276
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	119	38	108	61	-33	233	293	526	526
% OF NORM	138%	115%	998%	346%	67%	682%	141%	170%	170%
FEB 2011	580	457	318	217	236	524	1,808	2,333	3,609
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	220	101	228	168	106	432	823	1,256	1,782
% OF NORM	161%	128%	354%	443%	182%	570%	184%	217%	198%
MAR 2011	(Forecast) 619	1,328	620	200	253	752	3,019	3,772	7,380
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	325	53	-10	47	453	438	892	2,673
% OF NORM	104%	132%	109%	95%	123%	252%	117%	131%	157%
APR 2011	757	1,328	620	200	207	1,129	3,111	4,239	11,620
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	248	139	56	27	769	577	1,345	4,019
% OF NORM	117%	123%	129%	139%	115%	314%	123%	146%	153%
MAY 2011	1,137	1,280	400	147	186	600	3,150	3,750	15,370
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	56	35	88	0	0	308	179	487	4,506
% OF NORM	105%	103%	128%	100%	100%	205%	106%	115%	141%
JUN 2011	1,704	2,740	470	152	178	350	5,244	5,594	20,964
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	92	73	47	0	0	64	212	276	4,782
% OF NORM	106%	103%	111%	100%	100%	122%	104%	105%	130%
JUL 2011	863	1,830	190	57	137	250	3,077	3,327	24,291
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	44	54	11	0	0	32	109	141	4,923
% OF NORM	105%	103%	106%	100%	100%	115%	104%	104%	125%
AUG 2011	353	604	68	39	115	150	1,179	1,329	25,620
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	3	0	0	19	3	22	4,945
% OF NORM	100%	100%	105%	100%	100%	115%	100%	102%	124%
SEP 2011	333	452	111	38	111	110	1,045	1,155	26,775
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	4,956
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	123%
OCT 2011	385	523	66	5	120	86	1,099	1,185	27,960
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	4,964
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	122%
NOV 2011	384	398	67	6	118	83	973	1,056	29,016
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	4,971
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	121%
DEC 2011	329	247	0	12	100	56	688	744	29,761
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	4,975
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	120%
Calendar Year Totals									
NORMAL	7,875	11,487	3,050	1,159	1,828	4,363	25,398	29,761	
DEPARTURE	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
% OF NORM	662	875	676	276	147	2,340	2,635	4,975	
	109%	108%	128%	131%	109%	216%	112%	120%	

[REDACTED] NWO

From: [REDACTED] NWO
Sent: Wednesday, March 02, 2011 11:36 PM
To: [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; Farhat, Jody S
NWD02; [REDACTED] NWD02
Cc: [REDACTED] NWO
Subject: FW: Updated Snow Water Equivalents (UNCLASSIFIED)
Attachments: Snow Core Sampling 2011.xlsx

Classification: UNCLASSIFIED
Caveats: NONE

FYI

[REDACTED]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[REDACTED] Office
[REDACTED] Blackberry
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-----Original Message-----

From: [REDACTED] NWO
Sent: Wednesday, March 02, 2011 4:46 PM
To: [REDACTED] NWO
Subject: FW: Updated Snow Water Equivalents (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

FYI

-----Original Message-----

From: [REDACTED] NWO
Sent: Wednesday, March 02, 2011 3:22 PM
To: Management, Missouri Water NWD02; [REDACTED] NWO; [REDACTED] NWO
Subject: FW: Updated Snow Water Equivalents (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----

From: Josh Barnwell [mailto:Joshua.Barnwell@noaa.gov]
Sent: Wednesday, March 02, 2011 4:19 PM
To: Anne.Sawyer@noaa.gov; Carrie.Olheiser@noaa.gov; [REDACTED] NWD02;
Julie.Meyer@noaa.gov; [REDACTED] NWO; Gina.Loss@noaa.gov; Tanja Fransen;
Gregory.Forrester@noaa.gov; Amy Schnetzler
Subject: Updated Snow Water Equivalents

Here is the updated sheet through 3/2

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[illegible]

[illegible]

Date	Time	Physical Location	County	Latitude (out to 4 decimal places)	Longitude (out to 4 decimal places)	Snow Depth	Snow Water Equivalent	Ratio	Remarks
1/17/2011	1700	Port of Morgan	Phillips	48.9997	-107.8322	19	3.77	.196	Coop
1/18/2011	1000	1 E Scobey	Daniels	48.7971	-105.3956	13	2.2	.169	Cocorahs
1/18/2011	0900	Glasgow .9 ESE	Valley	48.1947	-106.6125	19	3.49	.183	Cocorahs
1/18/2011	0700	14.5 NNW of Glasgow	Valley	48.3703	-106.7928	15	3.5	.230	
1/18/2011	0745	3 South of Hinsdale	Valley	48.3972	-107.0532	14	3.2	.228	
1/18/2011	0830	.5 SE of Nelson Reservoir	Phillips	48.4972	-107.5222	24	4.5	.187	
1/18/2011	0945	2 W of Dodson	Phillips	48.4006	-108.2998	17	2.6	.153	
1/18/2011	1130	10 N Malta	Phillip	48.4703	-107.7868	12	2.8	.233	
1/18/2011	1300	6 SW of Malta	Phillips	48.2917	-107.9429	24	6.3	.267	
1/18/2011	1430	7 NW of Glasgow	Valley	48.2683	-106.7460	20	4.6	.230	
1/18/2011	1530	9 SE of Glasgow	Valley	48.1094	-106.5552	17	3.3	.194	
1/19/2011	0700	16.9 WSW Glendive	Dawson	46.9926	-105.0248	14	1.09	.078	Cocorahs
1/19/2011	0700	15.6 NNE Frazer	Valley	48.2653	-105.9340	25	6.56	.262	Cocorahs
1/19/2011	0700	Westby	Sheridan	48.8707	-104.5000	17	3	.176	
1/19/2011	0815	7 W of Glentana	Valley	48.8517	-106.3943	11	3	.272	
1/19/2011	0900	1 S of Richland	Valley	48.8139	-106.0651	15	3.4	.226	
1/19/2011	0945	2.5 N of Scobey	Daniels	48.8241	-105.4244	13	2.9	.223	
1/19/2011	1030	5 S of Scobey	Daniels	48.7223	-105.4204	11	2.4	.218	
1/19/2011	1100	14 W of Plentywood	Sheridan	48.7893	-104.8364	12	2.6	.216	
1/19/2011	1130	5 N of Plentywood	Sheridan	48.8382	-104.5798	8	2.2	.275	
1/19/2011	1330	2 S of Medicine Lake	Sheridan	48.4847	-104.4912	15	3.6	.240	
1/19/2011	1445	4.5 E of Culbertson	Roosevelt	48.1432	-104.4309	16	4.1	.256	
1/19/2011	1540	7.5 N of Brockton	Roosevelt	48.2302	-104.9006	15	3.8	.253	
1/20/2011	0700	2.2W Glendive	Dawson	47.1053	-104.7551	15	2.64	.176	Cocorahs
1/20/2011	0700	4.3 NW Glasgow	Valley	48.2462	-106.6932	21	3.75	.179	Cocorahs
1/20/2011	0700	15.6 NNE Frazer	Valley	48.2653	-105.9340	24	5.86	.244	Cocorahs
1/20/2011	0645	5.1 E Flaxville	Daniels	48.7931	-105.0613	10.5	2.71	.258	Cocorahs
1/20/2011	0700	.6 W Plentywood	Sheridan	48.7748	-104.5670	16	1.32	.083	Cocorahs
1/20/2011	1100	NWS Glasgow	Valley	48.2139	-106.6214	16	3.9	.244	
1/20/2011	0700	8.3 SSW Nashua	Valley	48.0322	-106.4493	20	3.8	.190	Cocorahs

1/21/2011	0800	1.2 ENE Scobey	Daniels	48.7971	-105.3956	13	2.2	.169	Cocorahs
1/31/2011	1230	Glendive	Dawson	47.1065	-104.7183	23	3.34	.145	
1/31/2011	0730	Hinsdale 4 SW	Valley	48.3475	-107.1528	32	6.84	.214	Coop
1/31/2011	0700	16.9 WSW Glendive	Dawson	46.9926	-105.0248	20	2.1	.105	Cocorahs
1/31/2011	1700	Glasgow .9 ESE	Valley	48.1947	-106.6125	23	4.13	.179	Cocorahs
1/31/2011	2200	Bredette	Roosevelt	48.5500	-105.2670	18	2.55	.141	Coop
1/31/2011	2030	Glendive	Dawson	47.1000	-104.7160	23	3.34	.145	Coop
1/31/2011	1430	Fort Peck Power House	McCone	48.0099	-106.4142	23	5.7	.248	USACE
1/31/2011	1700	Culbertson	Roosevelt	48.1500	-104.5170	23.5	2.55	.109	Coop

[illegible]

Date	Time	Physical Location	County	Latitude (out to 4 decimal places)	Longitude (out to 4 decimal places)	Snow Depth	Snow Water Equivalent	Ratio
2/12/2011	0800	Port of Morgan	Phillips	48.9997	-107.8322	18	3.95	.219
2/13/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	11	3.2	.291
2/14/2011	0700	2.2W Glendive	Dawson	47.1053	-104.7551	10.4	3.12	.300
2/14/2011	0800	1.2ENE Scobey	Daniels	48.7971	-105.3956	9.5	2.12	.223
2/14/2011	0700	Sidney 3.5E	Richland	47.7575	-104.1272	16	3.55	.221
2/14/2011	0700	Frazer 15.6NNE	Valley	48.2653	-105.9340	15	4.13	.275
2/14/2011	0700	Nashua 8.3SSW	Valley	48.0322	-106.4493	18.5	4.63	.250
2/14/2011	2100	Bredette	Roosevelt	48.5500	-105.2670	16	2.6	.219
2/14/2011	1000	Glasgow .9 ESE	Valley	48.1947	-106.6125	6	2.28	.380
2/14/2011	0700	Glasgow 4.3 NW	Valley	48.2462	-106.6932	16	3.88	.243
2/14/2011	1130	Fort Peck USACE	McCone	48.0099	-106.4142	17.4	4.84	.278
2/14/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	8	3.2	.400
2/15/2011	0700	Hinsdale 4 SW	Valley	48.3475	-107.1528	8	3.1	.388
2/15/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	8	3.1	.388
2/15/2011	0936	36 N Flowing Well Rest Area	McCone	47.8429	-106.1526	16	4.2	.263
2/15/2011	1011	5 N Flowing Well Rest Area	McCone	47.4001	-106.1734	8	3.5	.438
2/15/2011	1058	0.5 SW Brockway	McCone	47.2960	-105.7673	7	2.6	.371
2/15/2011	1244	5 NW Lindsay	Dawson	47.2536	-105.2360	9	2.7	.300
2/15/2011	1334	1 N Glendive	Dawson	47.1331	-104.6927	5	1.9	.380
2/15/2011	1431	S end of Savage	Richland	47.4485	-104.3431	7	2.8	.400
2/15/2011	1540	S end of Fairview	Richland	47.8458	-104.0589	11	3.5	.318
2/15/2011	1620	25.5 W Fairview	Richland	47.8678	-104.5809	9	3.0	.333
2/15/2011	1702	15 S Poplar	McCone	47.9023	-105.2102	11	2.4	.218
2/15/2011	1737	4 E Wolf Point	McCone	47.0871	-105.5529	16	5.0	.313
2/16/2011	743	East Nashua Hwy 2	Valley	48.0771	-106.1236	15.5	5.3	0.342
2/16/2011	843	Hwy 2 Hwy 13 Inter	Roosevelt	48.1202	-105.5084	14.4	3.3	0.229
2/16/2011	922	East Poplar Hwy 2	Roosevelt	48.1404	-104.9447	10.7	2.9	0.271
2/16/2011	1003	East Culbertson Hwy 2	Roosevelt	48.1483	-104.4188	13.6	4	0.294
2/16/2011	1037	NE Bainville Hwy 2 Hwy 405	Roosevelt	48.1474	-104.2031	8	2	0.25
2/16/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	8	3	0.375
2/16/2011	1123	1 NE Froid hwy 405	Sheridan	48.3463	-104.4715	13	3.3	0.254
2/16/2011	1206	Antelope Hwy 16	Sheridan	48.6825	-104.4584	6.2	1.5	0.242
2/16/2011	1341	14.5 West Plentwood	Sheridan	48.7938	-104.8581	12	3.6	0.3
2/16/2011	1425	1 E Scobey	Daniels	48.7939	-105.401	6.1	2.5	0.409
2/16/2011	1453	Between Peerless & Richland	Daniels	48.8091	-105.9559	14.2	2.9	0.204
2/16/2011	1533	Opheim	Valley	48.8566	-106.4051	14.1	2.5	0.177

Remarks
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USACE
Coop
Snow Water Team
Snow Water Team
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Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Mud
Frozen
Frozen
Frozen
Frozen
Slightly Frozen
Top Muddy / Frozen
Top Muddy / Frozen
Frozen
Frozen
Frozen

[illegible]

Date	Time	Physical Location	County	Latitude (out to 4 decimal places)	Longitude (out to 4 decimal places)	Snow Depth	Snow Water Equivalent	Ratio	Remarks
2/21/2011	0700	Sidney 3.5NNE	Richland	47.7575	-104.1272	18	4.34	.241	CoCoRaHS
2/21/2011	0700	Frazer 15.6 NNE	Valley	48.2653	-105.9340	14	3.87	.276	CoCoRaHS
2/22/2011	0800	Glendive	Dawson	47.1065	-104.7183	15	3.05	.203	Coop
2/22/2011	0800	Scobey 1.2E	Daniels	48.7971	-105.3956	9.5	2.56	.269	CoCoRaHS
2/22/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	13	4.0	.308	NWS Glasgow
2/23/2011	0930	2 WNW Dodson	Phillips	48.4049	-108.2814	15	2.7	.180	SWE Team
2/23/2011	1010	4 NNE Dodson	Phillips	48.4471	-108.2159	10	2.2	.220	SWE Team
2/23/2011	1055	7 NNE Malta	Phillips	48.4353	-107.8242	15	4.1	.273	SWE Team
2/23/2011	1150	8 SW Malta	Phillips	48.2724	-107.9645	16	4.2	.263	SWE Team
2/23/2011	1235	8 ENE Malta	Phillips	48.3929	-107.7342	17	5.1	.300	SWE Team
2/23/2011	1310	12 WNW Saco	Phillips	48.4893	-107.5275	15	3.2	.213	SWE Team
2/23/2011	1340	4 N Saco	Phillips	48.5100	-107.3472	18	3.9	.217	SWE Team
2/23/2011	1415	2.5 N Hinsdale	Valley	48.4257	-107.0737	16	3.7	.231	SWE Team
2/24/2011	1211	2 S Saco	Phillips	48.4437	-107.3459	4	1.7	.425	Partial Frozen Ground/Grassy
2/24/2011	1239	13 S Saco	Phillips	48.3608	-107.3020	5	1.8	.36	Frozen Ground
2/24/2011	1255	20 SW Saco	Phillips	48.2184	-107.2665	10	3.0	.3	Frozen Ground
2/24/2011	1311	22 SSW Hinsdale	Valley	48.1200	-107.3242	13	4.2	.32	Frozen Ground
2/24/2011	1336	32 SW Hindsdale	Valley	47.9773	-107.3822	12	3.5	.29	Frozen Ground
2/24/2011	1502	12 N Saco	Phillips	48.6274	-107.3594	17	4.4	.26	Frozen Ground
2/24/2011	1516	18 N Saco	Phillips	48.7109	-107.3594	18	5.1	.28	Frozen Ground
2/24/2011	1535	22 NNE Saco	Phillips	48.7419	-107.2784	5	1.8	.36	Frozen Ground
2/25/2011	0800	4.3 NW Glasgow	Valley	48.2462	-106.6932	16	3.41	.213	CoCoRaHS - NWS Employee
2/25/2011	0735	E St. Marie	Valley	48.4015	-106.5138	22	5.3	0.241	Frozen Ground
2/25/2011	0758	MM 30 on Hwy 24	Valley	48.592	-106.5088	21	5.2	0.248	Partial Frozen Ground/Grassy
2/25/2011	0830	5 Mi E on Baylor Rd from Hwy 24	Valley	48.6647	-106.3731	21	4.6	0.219	Partial Frozen Ground/Grassy
2/25/2011	0905	9 Mi W on Britsch Rd from Hwy 24	Valley	48.6525	-106.6785	15	4.0	0.267	Frozen Ground
2/25/2011	0941	3 Mi W on Britsch Rd from Hwy 24	Valley	48.6647	-106.5491	15	3.7	0.247	Partial Frozen Ground/Grassy
2/25/2011	1017	2 S Opheim	Valley	48.8166	-106.4135	15	3.7	0.247	Partial Frozen Ground/Grassy
2/25/2011	1109	15 W Opheim	Valley	48.8979	-106.7045	17	4.6	0.271	Frozen Ground
2/25/2011	1147	8 W Opheim	Valley	48.8554	-106.5427	16	3.7	0.231	Frozen Ground
2/25/2011	1225	Port of Opheim	Valley	48.9988	-106.3799	21	5.5	0.262	Frozen Ground
2/25/2011	1315	7 E Opheim	Valley	48.8550	-106.2560	15	4.5	0.300	Frozen Ground
2/25/2011	1345	10 S Glentana	Valley	48.7176	-106.2393	15	4.0	0.267	Frozen Ground
2/25/2011	1400	20 S Glentana	Valley	48.5742	-106.2393	19	4.2	0.221	Partial Frozen Ground/Grassy
2/25/2011	1413	30 S Glentana	Valley	48.4921	-106.2486	26	7.4	0.285	Frozen Ground
2/25/2011	1432	40 S Glentana	Valley	48.2988	-106.2625	20	4.7	0.235	Partial Frozen Ground/Grassy

NWO

From: [REDACTED] NWO
Sent: Wednesday, March 02, 2011 11:24 PM
To: [REDACTED] NWO; [REDACTED] NWO
Cc: [REDACTED] NWO; [REDACTED] NWD02; Farhat, Jody S NWD02
Subject: FW: (UNCLASSIFIED)
Attachments: SnowSurvey_02_28_11.pdf; Snow Core Sampling 2011.xlsx

Classification: UNCLASSIFIED
Caveats: NONE

FYI

[REDACTED]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[REDACTED] Office
[REDACTED] Blackberry
[\[REDACTED\]@usace.army.mil](mailto:[REDACTED]@usace.army.mil)

-----Original Message-----

From: [REDACTED] NWO
Sent: Monday, February 28, 2011 2:28 PM
To: [REDACTED] NWO
Subject: FW: (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

FYI

-----Original Message-----

From: [REDACTED] NWO
Sent: Monday, February 28, 2011 1:17 PM
To: Management, Missouri Water NWD02
Cc: [REDACTED] NWO; [REDACTED] NWO
Subject: (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Attached find (1) one snow survey performed by Fort Peck Project and snow surveys conducted by NOAA

[REDACTED]
Natural Resource Specialists

Fort Peck Project, Fort Peck MT.

PO Box 208, 59223

[REDACTED]

FAX [REDACTED]

[REDACTED]@usace.army.mil

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Cooperative Missouri Basin Plains Snow Survey

Date: February 28, 2014 Time: 1300 Site Number: MT18

Location Name (including city/state): Fort Peck, MT

Latitude: 48.0098562 Longitude: -106.414162

Estimated % Snow Cover At Course: 100 Estimated % Snow Cover General Area: 100

Indicate your choice:

Drifting: ☐ None ☐ Light ☐ Moderate ☒ Heavy ☐ Extreme

Soil Moisture: ☐ Dry ☐ Moist ☒ Wet ☐ Saturated (Conditions going into winter)

Soil Frost: ☐ Flinty ☐ Hard ☒ Moderate ☐ Loose ☐ Rubbery

Pick Axe Penetration: 3.0 inches Estimated Frost Depth: 1.5 inches

REMARKS AND ENROUTE OBSERVATIONS:

No ice under snow

Sampling Point	¹ Snow Depth	Ground Ice Layer (if present)		
		Thickness	Estimated Density (%)	² Ice Water Equivalent
#1	22.5	0		0
#2	12	0		0
#3	13	0		0
#4	20.5	0		0
#5	13	0		0
Totals	81			0
Averages	16.2			0

²Ice Water Equivalent

²Ice Water Equivalent = Ice Thickness X Estimated Density (%) / 100

³Snow Water Equivalent (SWE) Calculation

³SWE (inches) = ⁴Total Weight of Snow (lbs) / ⁵Conversion Factor (lbs/in)

³SWE (inches) = 4.875 (lbs) / 1.096 (lbs/in) = 4.44 (inches)

⁴Total Weight of Snow Calculation

⁴Total Weight of Snow (lbs) = Weight of Accumulated Samples in Bucket - Bucket Tare Weight

Bucket Tare Weight (lbs) = 2.188 lbs

⁴Total Weight of Snow (lbs) = 7.063 - 2.188 = 4.875 lbs

⁵Conversion Factor Calculation

⁵Conversion Factor (lbs/in) = Water Density x Area of Tube x number of measurements

Area of Tube = $\pi \times (\text{inside dia (inches)} / 2)^2 = 3.14159 \times (2.78 \text{ inches} / 2)^2 = 6.07 \text{ in}^2$

Water Density = 0.03612 lb/in³ at 32°F

⁵Conversion Factor = 0.03612 lb/in³ x 6.07 in² x 5 measurements = 1.096 lbs/in

TOTAL WATER EQUIVALENT CALCULATION & SUMMARY

¹ Average Snow Depth	16.2	inches
² Ice Water Equivalent	0	inches
+ ³ Snow Water Equivalent	4.44	inches
= Total Water Equivalent (SWE + Ice)	4.44	inches

Reporting Instructions:

Scan this form and email it or the results to: Missouri.Water.Management@usace.army.mil

Date	Time	Physical Location	County	Latitude (out to 4 decimal places)	Longitude (out to 4 decimal places)	Snow Depth	Snow Water Equivalent	Ratio	Remarks
2/21/2011	0700	Sidney 3.5NNE	Richland	47.7575	-104.1272	18	4.34	.241	CoCoRaHS
2/21/2011	0700	Frazer 15.6 NNE	Valley	48.2653	-105.9340	14	3.87	.276	CoCoRaHS
2/22/2011	0800	Glendive	Dawson	47.1065	-104.7183	15	3.05	.203	Coop
2/22/2011	0800	Scobey 1.2E	Daniels	48.7971	-105.3956	9.5	2.56	.269	CoCoRaHS
2/22/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	13	4.0	.308	NWS Glasgow
2/23/2011	0930	2 WNW Dodson	Phillips	48.4049	-108.2814	15	2.7	.180	SWE Team
2/23/2011	1010	4 NNE Dodson	Phillips	48.4471	-108.2159	10	2.2	.220	SWE Team
2/23/2011	1055	7 NNE Malta	Phillips	48.4353	-107.8242	15	4.1	.273	SWE Team
2/23/2011	1150	8 SW Malta	Phillips	48.2724	-107.9645	16	4.2	.263	SWE Team
2/23/2011	1235	8 ENE Malta	Phillips	48.3929	-107.7342	17	5.1	.300	SWE Team
2/23/2011	1310	12 WNW Saco	Phillips	48.4893	-107.5275	15	3.2	.213	SWE Team
2/23/2011	1340	4 N Saco	Phillips	48.5100	-107.3472	18	3.9	.217	SWE Team
2/23/2011	1415	2.5 N Hinsdale	Valley	48.4257	-107.0737	16	3.7	.231	SWE Team
2/24/2011	1211	2 S Saco	Phillips	48.4437	-107.3459	4	1.7	.425	Partial Frozen Ground/Grassy
2/24/2011	1239	13 S Saco	Phillips	48.3608	-107.3020	5	1.8	.36	Frozen Ground
2/24/2011	1255	20 SW Saco	Phillips	48.2184	-107.2665	10	3.0	.3	Frozen Ground
2/24/2011	1311	22 SSW Hinsdale	Valley	48.1200	-107.3242	13	4.2	.32	Frozen Ground
2/24/2011	1336	32 SW Hinsdale	Valley	47.9773	-107.3822	12	3.5	.29	Frozen Ground
2/24/2011	1502	12 N Saco	Phillips	48.6274	-107.3594	17	4.4	.26	Frozen Ground
2/24/2011	1516	18 N Saco	Phillips	48.7109	-107.3594	18	5.1	.28	Frozen Ground
2/24/2011	1535	22 NNE Saco	Phillips	48.7419	-107.2784	5	1.8	.36	Frozen Ground
2/25/2011	0800	4.3 NW Glasgow	Valley	48.2462	-106.6932	16	3.41	.213	CoCoRaHS - NWS Employee
2/25/2011	0735	E St. Marie	Valley	48.4015	-106.5138	22	5.3	0.241	Frozen Ground
2/25/2011	0758	MM 30 on Hwy 24	Valley	48.592	-106.5088	21	5.2	0.248	Partial Frozen Ground/Grassy
2/25/2011	0830	5 Mi E on Baylor Rd from Hwy 2	Valley	48.6647	-106.3731	21	4.6	0.219	Partial Frozen Ground/Grassy
2/25/2011	0905	9 Mi W on Britsch Rd from Hwy	Valley	48.6525	-106.6785	15	4.0	0.267	Frozen Ground
2/25/2011	0941	3 Mi W on Britsch Rd from Hwy	Valley	48.6647	-106.5491	15	3.7	0.247	Partial Frozen Ground/Grassy
2/25/2011	1017	2 S Opheim	Valley	48.8166	-106.4135	15	3.7	0.247	Partial Frozen Ground/Grassy
2/25/2011	1109	15 W Opheim	Valley	48.8979	-106.7045	17	4.6	0.271	Frozen Ground
2/25/2011	1147	8 W Opheim	Valley	48.8554	-106.5427	16	3.7	0.231	Frozen Ground
2/25/2011	1225	Port of Opheim	Valley	48.9988	-106.3799	21	5.5	0.262	Frozen Ground
2/25/2011	1315	7 E Opheim	Valley	48.8550	-106.2560	15	4.5	0.300	Frozen Ground
2/25/2011	1345	10 S Glentana	Valley	48.7176	-106.2393	15	4.0	0.267	Frozen Ground
2/25/2011	1400	20 S Glentana	Valley	48.5742	-106.2393	19	4.2	0.221	Partial Frozen Ground/Grassy
2/25/2011	1413	30 S Glentana	Valley	48.4921	-106.2486	26	7.4	0.285	Frozen Ground
2/25/2011	1432	40 S Glentana	Valley	48.2988	-106.2625	20	4.7	0.235	Partial Frozen Ground/Grassy

Date	Time	Physical Location	County	Latitude (out to 4 decimal places)	Longitude (out to 4 decimal places)	Snow Depth	Snow Water Equivalent	Ratio	Remarks
1/17/2011	1700	Port of Morgan	Phillips	48.9997	-107.8322	19	3.77	.196	Coop
1/18/2011	1000	1 E Scobey	Daniels	48.7971	-105.3956	13	2.2	.169	Cocorahs
1/18/2011	0900	Glasgow .9 ESE	Valley	48.1947	-106.6125	19	3.49	.183	Cocorahs
1/18/2011	0700	14.5 NNW of Glasgow	Valley	48.3703	-106.7928	15	3.5	.230	
1/18/2011	0745	3 South of Hinsdale	Valley	48.3972	-107.0532	14	3.2	.228	
1/18/2011	0830	.5 SE of Nelson Reservoir	Phillips	48.4972	-107.5222	24	4.5	.187	
1/18/2011	0945	2 W of Dodson	Phillips	48.4006	-108.2998	17	2.6	.153	
1/18/2011	1130	10 N Malta	Phillip	48.4703	-107.7868	12	2.8	.233	
1/18/2011	1300	6 SW of Malta	Phillips	48.2917	-107.9429	24	6.3	.267	
1/18/2011	1430	7 NW of Glasgow	Valley	48.2683	-106.7460	20	4.6	.230	
1/18/2011	1530	9 SE of Glasgow	Valley	48.1094	-106.5552	17	3.3	.194	
1/19/2011	0700	16.9 WSW Glendive	Dawson	46.9926	-105.0248	14	1.09	.078	Cocorahs
1/19/2011	0700	15.6 NNE Frazer	Valley	48.2653	-105.9340	25	6.56	.262	Cocorahs
1/19/2011	0700	Westby	Sheridan	48.8707	-104.5000	17	3	.176	
1/19/2011	0815	7 W of Glentana	Valley	48.8517	-106.3943	11	3	.272	
1/19/2011	0900	1 S of Richland	Valley	48.8139	-106.0651	15	3.4	.226	
1/19/2011	0945	2.5 N of Scobey	Daniels	48.8241	-105.4244	13	2.9	.223	
1/19/2011	1030	5 S of Scobey	Daniels	48.7223	-105.4204	11	2.4	.218	
1/19/2011	1100	14 W of Plentywood	Sheridan	48.7893	-104.8364	12	2.6	.216	
1/19/2011	1130	5 N of Plentywood	Sheridan	48.8382	-104.5798	8	2.2	.275	
1/19/2011	1330	2 S of Medicine Lake	Sheridan	48.4847	-104.4912	15	3.6	.240	
1/19/2011	1445	4.5 E of Culbertson	Roosevelt	48.1432	-104.4309	16	4.1	.256	
1/19/2011	1540	7.5 N of Brockton	Roosevelt	48.2302	-104.9006	15	3.8	.253	
1/20/2011	0700	2.2W Glendive	Dawson	47.1053	-104.7551	15	2.64	.176	Cocorahs
1/20/2011	0700	4.3 NW Glasgow	Valley	48.2462	-106.6932	21	3.75	.179	Cocorahs
1/20/2011	0700	15.6 NNE Frazer	Valley	48.2653	-105.9340	24	5.86	.244	Cocorahs
1/20/2011	0645	5.1 E Flaxville	Daniels	48.7931	-105.0613	10.5	2.71	.258	Cocorahs
1/20/2011	0700	.6 W Plentywood	Sheridan	48.7748	-104.5670	16	1.32	.083	Cocorahs
1/20/2011	1100	NWS Glasgow	Valley	48.2139	-106.6214	16	3.9	.244	
1/20/2011	0700	8.3 SSW Nashua	Valley	48.0322	-106.4493	20	3.8	.190	Cocorahs

1/21/2011	0800	1.2 ENE Scobey	Daniels	48.7971	-105.3956	13	2.2	.169	Cocorahs
1/31/2011	1230	Glendive	Dawson	47.1065	-104.7183	23	3.34	.145	
1/31/2011	0730	Hinsdale 4 SW	Valley	48.3475	-107.1528	32	6.84	.214	Coop
1/31/2011	0700	16.9 WSW Glendive	Dawson	46.9926	-105.0248	20	2.1	.105	Cocorahs
1/31/2011	1700	Glasgow .9 ESE	Valley	48.1947	-106.6125	23	4.13	.179	Cocorahs
1/31/2011	2200	Bredette	Roosevelt	48.5500	-105.2670	18	2.55	.141	Coop
1/31/2011	2030	Glendive	Dawson	47.1000	-104.7160	23	3.34	.145	Coop
1/31/2011	1430	Fort Peck Power House	McCone	48.0099	-106.4142	23	5.7	.248	USACE
1/31/2011	1700	Culbertson	Roosevelt	48.1500	-104.5170	23.5	2.55	.109	Coop

[illegible]

Date	Time	Physical Location	County	Latitude (out to 4 decimal places)	Longitude (out to 4 decimal places)	Snow Depth	Snow Water Equivalent	Ratio
2/12/2011	0800	Port of Morgan	Phillips	48.9997	-107.8322	18	3.95	.219
2/13/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	11	3.2	.291
2/14/2011	0700	2.2W Glendive	Dawson	47.1053	-104.7551	10.4	3.12	.300
2/14/2011	0800	1.2ENE Scobey	Daniels	48.7971	-105.3956	9.5	2.12	.223
2/14/2011	0700	Sidney 3.5E	Richland	47.7575	-104.1272	16	3.55	.221
2/14/2011	0700	Frazer 15.6NNE	Valley	48.2653	-105.9340	15	4.13	.275
2/14/2011	0700	Nashua 8.3SSW	Valley	48.0322	-106.4493	18.5	4.63	.250
2/14/2011	2100	Bredette	Roosevelt	48.5500	-105.2670	16	2.6	.219
2/14/2011	1000	Glasgow .9 ESE	Valley	48.1947	-106.6125	6	2.28	.380
2/14/2011	0700	Glasgow 4.3 NW	Valley	48.2462	-106.6932	16	3.88	.243
2/14/2011	1130	Fort Peck USACE	McCone	48.0099	-106.4142	17.4	4.84	.278
2/14/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	8	3.2	.400
2/15/2011	0700	Hinsdale 4 SW	Valley	48.3475	-107.1528	8	3.1	.388
2/15/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	8	3.1	.388
2/15/2011	0936	36 N Flowing Well Rest Area	McCone	47.8429	-106.1526	16	4.2	.263
2/15/2011	1011	5 N Flowing Well Rest Area	McCone	47.4001	-106.1734	8	3.5	.438
2/15/2011	1058	0.5 SW Brockway	McCone	47.2960	-105.7673	7	2.6	.371
2/15/2011	1244	5 NW Lindsay	Dawson	47.2536	-105.2360	9	2.7	.300
2/15/2011	1334	1 N Glendive	Dawson	47.1331	-104.6927	5	1.9	.380
2/15/2011	1431	S end of Savage	Richland	47.4485	-104.3431	7	2.8	.400
2/15/2011	1540	S end of Fairview	Richland	47.8458	-104.0589	11	3.5	.318
2/15/2011	1620	25.5 W Fairview	Richland	47.8678	-104.5809	9	3.0	.333
2/15/2011	1702	15 S Poplar	McCone	47.9023	-105.2102	11	2.4	.218
2/15/2011	1737	4 E Wolf Point	McCone	47.0871	-105.5529	16	5.0	.313
2/16/2011	743	East Nashua Hwy 2	Valley	48.0771	-106.1236	15.5	5.3	0.342
2/16/2011	843	Hwy 2 Hwy 13 Inter	Roosevelt	48.1202	-105.5084	14.4	3.3	0.229
2/16/2011	922	East Poplar Hwy 2	Roosevelt	48.1404	-104.9447	10.7	2.9	0.271
2/16/2011	1003	East Culbertson Hwy 2	Roosevelt	48.1483	-104.4188	13.6	4	0.294
2/16/2011	1037	NE Bainville Hwy 2 Hwy 405	Roosevelt	48.1474	-104.2031	8	2	0.25
2/16/2011	1100	NWS Glasgow	Valley	48.1300	-106.3700	8	3	0.375
2/16/2011	1123	1 NE Froid hwy 405	Sheridan	48.3463	-104.4715	13	3.3	0.254
2/16/2011	1206	Antelope Hwy 16	Sheridan	48.6825	-104.4584	6.2	1.5	0.242
2/16/2011	1341	14.5 West Plentwood	Sheridan	48.7938	-104.8581	12	3.6	0.3
2/16/2011	1425	1 E Scobey	Daniels	48.7939	-105.401	6.1	2.5	0.409
2/16/2011	1453	Between Peerless & Richland	Daniels	48.8091	-105.9559	14.2	2.9	0.204
2/16/2011	1533	Opheim	Valley	48.8566	-106.4051	14.1	2.5	0.177

Remarks
Coop
Cocorahs
Cocorahs
Cocorahs
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Cocorahs
Cocorahs
Coop
Cocorahs
Cocorahs
USACE
Coop
Snow Water Team
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Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Snow Water Team
Mud
Frozen
Frozen
Frozen
Frozen
Frozen
Slightly Frozen
Top Muddy / Frozen
Top Muddy / Frozen
Frozen
Frozen
Frozen

[illegible]

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Wednesday, March 02, 2011 2:05 PM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; 'kinney@wapa.gov'; 'bcallies@wapa.gov'; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWO; 'shimek@wapa.gov'; [REDACTED] NWO
Subject: March 2011 Reservoir Regulation Studies Graphics and Statistics (UNCLASSIFIED)
Attachments: resfcastmar.pdf; WAPAMNTH-11-MAR.xlsx; WAPA.MonthlyStudies.Graphic.MAR.2011.pptx

Classification: UNCLASSIFIED

Caveats: NONE

Everyone,

Here are the March 2011 study graphics and statistics.

If you have any questions please contact me.

Thanks,

[REDACTED]
Hydraulic Engineer
Missouri River Basin Water Management Division
[REDACTED]

Classification: UNCLASSIFIED

Caveats: NONE

MAR 1, 2011 / BASIC CONDITION / 29.8 MAF / BALANCED
 FULL SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 19.7 (CALC)
 Elevations & Storages are for Date Shown
 Avg Discharge & Energy are Monthly Values
 Date of Study: March 1, 2011

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -----													
ELEV FTMSL	2235.8	2237.0	2238.2	2238.9	2241.1	2240.7	2238.6	2237.6	2237.2	2237.2	2236.0	2234.8	2234.0
DISCH KCFS	9.8	7.0	8.0	11.0	11.5	11.5	11.5	8.9	6.5	6.5	11.0	11.5	11.5
GARRISON -----													
ELEV FTMSL	1838.5	1839.7	1841.2	1841.8	1844.7	1845.1	1843.2	1842.1	1841.3	1840.9	1840.2	1838.7	1837.5
DISCH KCFS	25.8	22.8	22.0	25.0	28.5	28.5	28.5	23.3	18.0	18.0	19.0	25.0	25.0
OAHE -----													
ELEV FTMSL	1607.6	1610.3	1611.7	1612.5	1613.7	1613.5	1612.4	1610.6	1609.3	1607.5	1606.7	1606.9	1607.5
DISCH KCFS	17.7	18.5	23.6	25.9	26.7	29.7	32.2	32.7	24.4	27.1	22.0	23.7	22.7
BIG BEND -----													
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	19.1	23.6	25.9	26.7	29.6	31.9	32.3	24.1	26.8	21.8	23.7	22.7
FORT RANDALL ----													
ELEV FTMSL	1350.6	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	19.7	23.2	28.1	29.0	30.1	31.9	34.7	34.2	34.3	20.2	18.3	17.0
GAVINS POINT ----													
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	23.3	26.7	30.7	31.6	31.6	33.2	36.0	36.0	36.0	22.0	20.0	20.0
SYSTEM -----													
STORAGE 1000 AF	57631	59301	60694	61333	63205	63159	61679	60370	58999	57806	57154	56826	56807
ENERGY GWh	10579	710	787	944	971	1052	1096	1013	852	844	748	816	745
PEAK POWER MW		2345	2357	2363	2387	2386	2378	2361	2338	2293	2255	2275	2282

MAR 1, 2011 / LOWER BASIC / 20.8 MAF / BALANCED
 FULL SERV / FULL NAV SEAS / PULSE MAR 5.0 MAY 13.2 (CALC)

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -----													
ELEV FTMSL	2235.8	2235.9	2236.0	2235.1	2235.2	2233.6	2231.5	2230.3	2229.9	2229.4	2227.7	2225.8	2224.3
DISCH KCFS	9.8	7.0	7.0	11.0	10.0	10.0	10.0	8.1	6.0	6.0	10.0	11.0	11.0
GARRISON -----													
ELEV FTMSL	1838.5	1838.1	1838.7	1838.9	1840.0	1839.1	1837.3	1836.2	1835.1	1834.4	1833.0	1830.9	1829.3
DISCH KCFS	25.8	22.8	18.0	20.0	23.5	23.5	23.5	19.6	16.0	16.0	19.0	24.0	24.0
OAHE -----													
ELEV FTMSL	1607.6	1609.0	1608.0	1606.3	1605.1	1602.7	1599.9	1597.2	1595.7	1594.7	1595.7	1597.3	1599.2
DISCH KCFS	17.7	22.3	28.8	31.3	31.6	33.7	33.6	30.9	22.1	19.5	13.2	16.6	15.9
BIG BEND -----													
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	23.0	28.8	31.3	31.6	33.6	33.2	30.3	21.7	19.1	13.0	16.6	15.9
FORT RANDALL ----													
ELEV FTMSL	1350.6	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	22.2	27.5	32.5	32.9	33.7	33.0	32.5	31.7	26.5	11.3	11.2	10.0
GAVINS POINT ----													
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	24.2	29.8	33.9	34.3	34.3	34.0	33.5	33.1	28.2	12.5	12.5	12.5
SYSTEM -----													
STORAGE 1000 AF	57631	58107	58227	57570	57560	56224	54421	52991	51528	50501	50135	49972	50079
ENERGY GWh	9709	775	835	990	986	1046	1034	904	757	649	534	628	572
PEAK POWER MW		2331	2327	2318	2315	2298	2276	2262	2239	2198	2166	2190	2201

MAR 1, 2011 / UPPER BASIC / 39.8 MAF / BALANCED
 FULL SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 20.0 (CALC)

	28-Feb-11	31-Mar	2011 30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	2012 31-Jan	29FEB
FORT PECK -----													
ELEV FTMSL	2235.8	2237.9	2240.3	2242.1	2247.9	2248.4	2245.8	2243.4	2240.9	2238.6	2236.8	2235.2	2234.0
DISCH KCFS	9.8	7.0	8.5	15.0	14.0	14.0	17.0	17.0	17.0	17.0	14.0	14.0	14.0
GARRISON -----													
ELEV FTMSL	1838.5	1841.1	1843.3	1843.6	1849.4	1850.3	1847.8	1845.5	1843.0	1841.0	1840.7	1838.9	1837.5
DISCH KCFS	25.8	22.8	26.0	40.0	40.0	40.0	40.0	40.0	40.0	39.5	22.0	30.0	30.0
OAHE -----													
ELEV FTMSL	1607.6	1611.5	1613.6	1615.0	1616.0	1614.0	1611.0	1608.9	1608.2	1607.1	1606.1	1606.5	1607.5
DISCH KCFS	17.7	15.7	26.8	39.3	43.9	52.9	54.3	51.8	43.8	46.2	27.1	27.2	26.1
BIG BEND -----													
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	16.4	26.8	39.3	43.9	52.8	54.0	51.5	43.5	46.1	27.0	27.2	26.1
FORT RANDALL ----													
ELEV FTMSL	1350.6	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	18.2	27.5	42.6	47.8	53.7	54.2	54.2	53.8	53.8	25.4	22.0	20.6
GAVINS POINT ----													
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	23.3	32.0	46.0	52.0	56.0	56.0	56.0	56.0	56.0	28.0	24.0	24.0
SYSTEM -----													
STORAGE 1000 AF	57631	60348	62501	63480	67279	66989	64482	62298	59983	57975	57299	56869	56811
ENERGY GWh	14324	666	909	1351	1390	1547	1553	1468	1404	1349	885	942	861
PEAK POWER MW		2357	2384	2391	2404	2393	2375	2366	2347	2288	2254	2274	2282

DATE OF STUDY 03/02/11

MAR 1, 2011 / LOWER BASIC / 20.8 MAF / BALANCED

99001 9901 9901 PAGE 1

TIME OF STUDY 09:10:25

FULL SERV / FULL NAV SEAS / PULSE MAR 5.0 MAY 13.2 (CALC)

STUDY NO 8

	28FEB11	15MAR	2011	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	2012	31DEC	31JAN	29FEB
	INI-SUM		22MAR											30NOV			
VALUES IN 1000 AF EXCEPT AS INDICATED																	
--FORT PECK--																	
NAT INFLOW	5080	195	91	117	492	682	1022	518	282	266	308	154	72	82	263	250	288
DEPLETION	373	-17	-8	-10	38	195	405	219	1	-108	-90	-24	-11	-13	-80	-69	-55
EVAPORATION	540							34	105	130	112	51	24	27	58		
MOD INFLOW	4167	212	99	127	454	487	617	265	176	244	286	127	59	68	285	319	343
RELEASE	6482	208	97	125	417	476	595	615	615	484	369	179	83	95	615	676	633
STOR CHANGE	-2315	3	1	2	37	-189	22	-350	-439	-240	-83	-52	-24	-27	-330	-357	-290
STORAGE	15176	15179	15181	15183	15220	15031	15053	14703	14264	14025	13941	13890	13866	13838	13509	13151	12861
ELEV FTMSL	2235.8	2235.8	2235.8	2235.9	2236.0	2235.1	2235.2	2233.6	2231.5	2230.3	2229.9	2229.6	2229.5	2229.4	2227.7	2225.8	2224.3
DISCH KCFS	9.8	7.0	7.0	7.0	7.0	11.0	10.0	10.0	10.0	8.1	6.0	6.0	6.0	6.0	10.0	11.0	11.0
POWER																	
AVE POWER MW		96	96	96	96	148	136	136	135	110	81	81	81	81	134	143	142
PEAK POW MW		164	164	164	164	163	163	162	160	159	159	159	159	159	158	156	155
ENERGY GWH	1053.7	34.6	16.1	20.7	69.1	110.4	98.2	101.3	100.7	79.0	60.2	29.1	13.6	15.5	99.4	106.7	99.1
--GARRISON--																	
NAT INFLOW	7509	418	195	250	863	768	1644	1098	483	362	418	159	74	85	198	209	285
DEPLETION	933	15	7	9	21	111	524	493	111	-107	20	-93	-43	-50	-52	-22	-12
CHAN STOR	-12	28				-39	10			19	21				-40	-10	
EVAPORATION	616							39	121	149	128	57	27	30	65		
REG INFLOW	12430	638	285	366	1259	1294	1725	1181	866	823	660	373	174	199	759	897	930
RELEASE	15114	774	305	321	1071	1230	1398	1445	1445	1164	984	476	222	254	1168	1476	1381
STOR CHANGE	-2685	-135	-21	45	187	64	327	-264	-579	-342	-323	-103	-48	-55	-409	-578	-451
STORAGE	18418	18283	18262	18307	18494	18558	18885	18621	18042	17700	17377	17274	17226	17172	16763	16184	15733
ELEV FTMSL	1838.5	1838.1	1838.0	1838.1	1838.7	1838.9	1840.0	1839.1	1837.3	1836.2	1835.1	1834.7	1834.6	1834.4	1833.0	1830.9	1829.3
DISCH KCFS	25.8	26.0	22.0	18.0	18.0	20.0	23.5	23.5	23.5	19.6	16.0	16.0	16.0	16.0	19.0	24.0	24.0
POWER																	
AVE POWER MW		323	274	225	225	250	295	295	293	242	197	196	196	195	230	287	284
PEAK POW MW		470	470	470	473	473	477	474	467	463	459	458	457	457	451	444	438
ENERGY GWH	2252.7	116.5	46.0	48.5	162.0	186.2	212.2	219.4	217.7	174.1	146.5	70.5	32.9	37.5	171.5	213.6	197.5
--OAH--																	
NAT INFLOW	1772	195	91	117	403	240	282	114	52	89	53	27	13	14		10	72
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	18	28
CHAN STOR	5	-1	16	16		-8	-14			17	16				-14	-22	
EVAPORATION	558							36	111	135	114	51	24	27	59		
REG INFLOW	15653	944	401	440	1425	1391	1521	1350	1270	1107	948	451	211	241	1084	1445	1425
RELEASE	18133	551	270	549	1716	1922	1880	2072	2069	1836	1361	589	310	259	815	1023	913
STOR CHANGE	-2480	393	131	-110	-291	-531	-358	-722	-799	-729	-412	-138	-99	-18	269	423	512
STORAGE	18877	19270	19401	19291	19000	18469	18111	17389	16589	15861	15448	15310	15211	15193	15462	15885	16397
ELEV FTMSL	1607.6	1608.9	1609.3	1609.0	1608.0	1606.3	1605.1	1602.7	1599.9	1597.2	1595.7	1595.2	1594.8	1594.7	1595.7	1597.3	1599.2
DISCH KCFS	17.7	18.5	19.5	30.8	28.8	31.3	31.6	33.7	33.6	30.9	22.1	19.8	22.3	16.3	13.2	16.6	15.9
POWER																	
AVE POWER MW		240	253	400	373	402	403	425	418	378	269	239	269	197	160	203	195
PEAK POW MW		715	717	716	711	702	695	682	668	654	647	644	642	642	647	655	664
ENERGY GWH	2747.4	86.5	42.6	86.3	268.9	298.8	289.9	316.1	311.2	272.2	200.0	86.2	45.2	37.7	119.3	150.7	135.8
--BIG BEND--																	
EVAPORATION	129							8	24	31	27	12	6	7	14		
REG INFLOW	18004	551	270	549	1716	1922	1880	2064	2044	1805	1333	577	304	252	800	1023	913
RELEASE	18045	592	270	549	1716	1922	1880	2064	2044	1804	1334	577	304	252	800	1023	913
STORAGE	1662	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621	1621
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	19.9	19.5	30.8	28.8	31.3	31.6	33.6	33.2	30.3	21.7	19.4	21.9	15.9	13.0	16.6	15.9
POWER																	
AVE POWER MW		95	92	146	135	146	148	157	156	144	106	97	110	80	66	82	76
PEAK POW MW		522	520	519	509	509	509	509	509	517	538	538	538	538	538	538	529
ENERGY GWH	1040.3	34.1	15.4	31.5	97.2	108.8	106.4	116.9	115.7	103.5	79.1	35.1	18.5	15.4	48.9	60.8	53.0
--FORT RANDALL--																	
NAT INFLOW	613	73	34	44	111	88	91	34	31	30	4	3	1	1	10	20	39
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3
EVAPORATION	146							10	32	39	31	12	5	5	12		
REG INFLOW	18432	663	303	592	1823	2001	1959	2070	2028	1788	1306	566	300	248	795	1040	949
RELEASE	18476	563	253	547	1637	2001	1959	2070	2028	1934	1949	887	416	274	692	690	575
STOR CHANGE	-44	100	50	45	186			0	0	-146	-643	-321	-116	-26	103	350	374
STORAGE	3168	3268	3318	3363	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124
ELEV FTMSL	1350.6	1351.8	1352.4	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	18.9	18.2	30.7	27.5	32.5	32.9	33.7	33.0	32.5	31.7	29.8	30.0	17.3	11.3	11.2	10.0
POWER																	
AVE POWER MW		155	151	253	230	274	277	283	277	271	254	225	219	126	83	85	80
PEAK POW MW		345	347	349	356	356	356	356	356	350	319	296	287	285	293	319	339
ENERGY GWH	1827.7	55.8	25.3	54.6	165.5	203.6	199.2	210.4	206.3	195.4	188.7	81.0	36.8	24.2	61.8	63.6	55.6
--GAVINS POINT--																	
NAT INFLOW	1235	79	37	48	135	112	107	82	92	89	96	47	22	25	80	80	104
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	1	
CHAN STOR	10	-6	1	-24	6	-10	-1	-1	1	1	1	3	0	24	11	0	2
EVAPORATION	45							3	8	11	10	4	2	2	5		
REG INFLOW	19562	637	292	571	1773	2085	2041	2109	2104	2018	2035	928	433	317	769	769	681
RELEASE	19550	625	292	571	1773	2085	2041	2109	2091	1993	2035	928	433	317	769	769	719
STOR CHANGE	12	12						13	25	13	25						-38
STORAGE	330	342	342	342	342	342	342	342	342	355	380	380	380	380	380	380	342
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	21.0	21.0	32.0	29.8	33.9	34.3	34.3	34.0	33.5	33.1	31.2	31.2	20.0	12.5	12.5	12.5
POWER																	
AVE POWER MW		72	72	106	100	110	111	111	110	111	111	107	107	71	44	44	44
PEAK POW MW		114	114	114	114	114	114	114	115	117	117	117	117	117	78	78	76
ENERGY GWH	787.5	25.9	12.2	22.8	72.3	81.6	79.6	82.2	82.1	79.8	82.5	38.3	17.9	13.5	33.0	33.0	30.7
--GAVINS POINT - SIOUX CITY--																	
NAT INFLOW	2436	237	110	142	734	360	210	150	120	87	69	33	15	18	45	32	74
DEPLETION	266	7	3	4	22	36	31	39	36	24	11	6	3	3	13		

DATE OF STUDY 03/02/11		MAR 1, 2011 / UPPER BASIC / 39.8 MAF / BALANCED												99001	9901	9901	PAGE	1
TIME OF STUDY 08:58:33		FULLS SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 20.0 (CALC)												STUDY NO				5
		VALUES IN 1000 AF EXCEPT AS INDICATED																
28FEB11		2011												2012				
INI-SUM		15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB	
--FORT PECK--																		
NAT INFLOW	10332	405	189	243	1022	1592	2726	1208	424	400	462	231	108	123	395	374	432	
DEPLETION	191	-24	-11	-14	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-146	-105	
EVAPORATION	340							23	73	31	78	18	8	9	39			
MOD INFLOW	9801	428	200	257	1045	1332	2213	981	413	438	473	242	113	129	479	520	537	
RELEASE	10192	208	97	125	506	922	833	861	1045	1011	1045	506	236	270	861	861	805	
STOR CHANGE	-391	220	103	132	539	410	1380	120	-633	-573	-572	-263	-123	-140	-381	-341	-268	
STORAGE	15176	15396	15499	15631	16170	16579	17959	18079	17446	16874	16302	16039	15916	15775	15394	15053	14785	
ELEV FTMSL	2235.8	2236.8	2237.3	2237.9	2240.3	2242.1	2247.9	2248.4	2245.8	2243.4	2240.9	2239.7	2239.2	2238.6	2236.8	2235.2	2234.0	
DISCH KCFS	9.8	7.0	7.0	7.0	8.5	15.0	14.0	14.0	17.0	17.0	17.0	17.0	17.0	17.0	14.0	14.0	14.0	
POWER																		
AVE POWER MW		96	96	97	118	167	170	172	171	170	168	166	166	165	165	164	162	
PEAK POW MW		164	165	165	167	168	172	173	170	169	167	166	166	165	164	163	162	
ENERGY GWH	1382.7	34.6	16.2	20.8	84.7	124.4	122.5	128.3	127.5	122.1	124.8	59.9	27.8	31.7	122.6	121.7	113.1	
--GARRISON--																		
NAT INFLOW	15733	868	405	520	1793	1792	4384	2562	725	542	628	239	112	127	296	313	427	
DEPLETION	997	4	2	3	18	100	802	621	93	-133	0	-118	-55	-63	-117	-96	-64	
CHAN STOR	-39	28			-15	-63	10		-28	0	0	0	9	11	29			
EVAPORATION	384							27	84	103	87	20		44				
REG INFLOW	24505	1099	500	643	2266	2552	4425	2775	1566	1583	1586	842	393	450	1260	1270	1296	
RELEASE	24816	774	305	321	1547	2460	2380	2460	2460	2379	2460	1190	555	603	1353	1845	1726	
STOR CHANGE	-311	326	194	321	719	92	2045	316	-894	-796	-874	-348	-162	-153	-93	-575	-429	
STORAGE	18418	18744	18938	19260	19979	20071	22115	22431	21537	20741	19868	19520	19358	19204	19111	18536	18107	
ELEV FTMSL	1838.5	1839.5	1840.1	1841.1	1843.3	1843.6	1849.4	1850.3	1847.8	1845.5	1843.0	1841.9	1841.4	1841.0	1840.7	1838.9	1837.5	
DISCH KCFS	25.8	26.0	22.0	18.0	26.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	38.0	22.0	30.0	30.0	
POWER																		
AVE POWER MW		325	277	228	330	491	501	503	503	501	494	487	484	463	278	376	372	
PEAK POW MW		476	478	481	498	498	503	504	502	500	498	484	483	481	480	473	468	
ENERGY GWH	3743.8	117.0	46.5	49.2	237.4	365.3	360.6	374.5	374.0	360.7	367.5	175.3	81.2	89.0	206.9	279.7	259.1	
--OAHE--																		
NAT INFLOW	3744	405	189	243	837	560	752	266	78	133	79	40	19	21	14	108		
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	28		
CHAN STOR	-13	-1	15	15	-30	-52				0	0	0	9	8	64	-32		
EVAPORATION	363							26	79	96	82	19		10	42			
REG INFLOW	27503	1154	499	565	2305	2897	2987	2527	2342	2388	2466	1210	565	621	1363	1808	1806	
RELEASE	27549	381	194	389	1596	2419	2612	3252	3336	3083	2693	1286	634	831	1667	1673	1502	
STOR CHANGE	-46	773	305	176	709	477	375	-725	-994	-695	-227	-76	-69	-210	-304	135	304	
STORAGE	18877	19650	19955	20132	20840	21318	21693	20967	19974	19278	19051	18975	18906	18697	18392	18527	18831	
ELEV FTMSL	1607.6	1610.1	1611.0	1611.5	1613.6	1615.0	1616.0	1614.0	1611.0	1608.9	1608.2	1608.0	1607.7	1607.1	1606.1	1606.5	1607.5	
DISCH KCFS	17.7	12.8	14.0	21.8	26.8	39.3	43.9	52.9	54.3	51.8	43.8	43.2	45.6	52.4	27.1	27.2	26.1	
POWER																		
AVE POWER MW		167	184	287	355	523	586	690	694	659	565	556	586	655	348	348	336	
PEAK POW MW		721	726	729	740	747	752	742	727	715	712	710	709	706	700	703	708	
ENERGY GWH	4319.4	60.1	30.9	62.0	255.5	389.0	422.0	513.6	516.5	474.2	420.0	200.0	98.4	125.7	258.7	259.2	233.7	
--BIG BEND--																		
EVAPORATION	71						5		15		19	16		2		9		
REG INFLOW	27478	381	194	389	1596	2419	2612	3247	3321	3064	2677	1282	632	829	1659	1673	1502	
RELEASE	27519	422	194	389	1596	2419	2612	3247	3321	3064	2677	1282	632	829	1659	1673	1502	
STORAGE	1662	1621	1621	1621	1621	1621	1621	1621	1621	1621	1622	1622	1622	1622	1622	1622	1622	
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	
DISCH KCFS	17.6	14.2	14.0	21.8	26.8	39.3	43.9	52.8	54.0	51.5	43.5	43.1	45.5	52.3	27.0	27.2	26.1	
POWER																		
AVE POWER MW		67	66	103	126	184	205	247	252	243	211	213	225	257	135	133	125	
PEAK POW MW		522	520	519	509	509	509	509	509	518	538	538	538	538	538	538	529	
ENERGY GWH	1586.5	24.3	11.1	22.3	90.4	136.9	147.8	183.6	187.7	175.2	157.1	76.7	37.7	49.3	100.3	99.0	87.0	
--FORT RANDALL--																		
NAT INFLOW	1279	151	70	90	230	206	243	80	47	46	6	4	2	2	14	30	59	
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3	3	
EVAPORATION	81							6	19	24	18	4	2	2	7			
REG INFLOW	28638	571	263	478	1822	2616	2843	3303	3334	3080	2663	1281	631	828	1665	1700	1558	
RELEASE	28683	471	213	433	1636	2616	2843	3303	3334	3226	3306	1602	747	854	1562	1350	1184	
STOR CHANGE	-44	100	50	45	186	0	0	0	0	-146	-643	-321	-116	-26	103	350	374	
STORAGE	3168	3268	3318	3363	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	2750	3124	
ELEV FTMSL	1350.6	1351.8	1352.4	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1344.8	1350.0	
DISCH KCFS	15.8	15.8	15.4	24.3	27.5	42.6	47.8	53.7	54.2	54.2	53.8	53.8	53.8	53.8	25.4	22.0	20.6	
POWER																		
AVE POWER MW		130	127	201	230	339	356	355	355	352	335	306	290	284	185	166	163	
PEAK POW MW		345	347	349	356	356	356	355	355	349	317	295	286	283	294	319	339	
ENERGY GWH	2405.3	46.8	21.4	43.4	165.4	251.9	256.4	264.2	264.2	253.6	249.4	110.3	48.8	54.6	137.9	123.5	113.6	
--GAVINS POINT--																		
NAT INFLOW	2311	166	77	99	279	260	285	192	138	133	144	71	33	38	120	120	156	
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	0	2	3	10	1		
CHAN STOR	-11	0	1	-17	-6	-29	-10	-11	-1	0	1	5	0	0	53	6	3	
EVAPORATION	24							2	5	6	6	1	1	1	3			
REG INFLOW	30844	637	292	516	1904	2829	3094	3443	3456	3357	3443	1666	778	889	1722	1476	1343	
RELEASE	30832	625	292	516	1904	2829	3094	3443	3443	3332	3443	1666	778	889	1722	1476	1381	
STOR CHANGE	12	12						13	25	25							-38	
STORAGE	330	342	342	342	342	342	342	342	355	380	380	380	380	380	380	380	342	
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0	
DISCH KCFS	20.7	21.0	21.0	28.9	32.0	46.0	52.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	28.0	24.0	24.0	
POWER																		
AVE POWER MW		72	72	98	106	113	111	111	112	114	115	115	115	115	79	79	78	
PEAK POW MW		114	114	114	114	113	111	111	112	115	115	115	115	115	78	78	76	
ENERGY GWH	886.5	25.9	12.2	21.2	76.0	83.8	80.2	82.3	83.0	82.1	85.5	41.4	19.3	22.1	58.5	58.7	54.5	
--GAVINS POINT - SIOUX CITY--																		
NAT INFLOW	5029	491	229	295	1524	840	560	350	180	132	103	50	23	27	67	48	110	
DEPLETION	266</																	

Gavins Point Dam Release
(million acre-feet)

	MAX <u>67-10</u>	MIN <u>67-10</u>	MEAN <u>67-10</u>	LAST <u>YEAR</u>	Jan-11 <u>FCST</u>	Jan-11 <u>LD fest</u>	Jan-11 <u>UD fest</u>	Feb-11 <u>FCST</u>	Feb-11 <u>LD fest</u>	Feb-11 <u>UD fest</u>	Mar-11 <u>FCST</u>	Mar-11 <u>LD fest</u>	Mar-11 <u>UD fest</u>	
JAN	1.553	0.702	1.051	0.978	1.138	1.045	1.291	1.139	1.139	1.139	1.139	1.139	1.139	* JAN
FEB	1.685	0.549	0.966	0.834	1.111	0.994	1.277	1.166	0.944	1.333	1.147	1.147	1.147	* FEB
MAR	2.191	0.623	1.206	0.922	1.389	1.313	1.389	1.389	1.313	1.389	1.433	1.488	1.433	MAR
APR	2.993	0.605	1.477	0.912	1.598	1.773	1.904	1.589	1.773	1.904	1.589	1.773	1.904	APR
MAY	3.664	0.651	1.730	1.550	1.888	2.084	2.890	1.888	2.084	2.890	1.888	2.085	2.829	MAY
JUN	3.569	0.715	1.771	1.649	1.880	2.041	3.094	1.880	2.041	3.094	1.880	2.041	3.094	JUN
JUL	3.782	0.495	1.983	2.152	1.943	2.109	3.443	1.943	2.109	3.474	1.943	2.109	3.443	JUL
AUG	3.959	0.661	2.129	2.581	2.041	2.091	3.443	2.041	2.091	3.474	2.041	2.091	3.443	AUG
SEP	3.894	1.102	2.112	2.805	2.083	1.993	3.332	2.112	1.993	3.362	2.142	1.993	3.332	SEP
OCT	4.197	0.760	2.106	3.000	2.152	2.035	3.443	2.183	2.035	3.474	2.214	2.035	3.443	OCT
NOV	4.165	0.448	1.834	2.749	2.082	1.674	3.333	2.112	1.674	3.362	2.142	1.678	3.333	NOV
DEC	<u>2.287</u>	<u>0.759</u>	<u>1.154</u>	<u>1.549</u>	<u>1.383</u>	<u>0.769</u>	<u>1.722</u>	<u>1.383</u>	<u>0.769</u>	<u>1.722</u>	<u>1.353</u>	<u>0.769</u>	<u>1.722</u>	DEC
TOTAL	8.070			21.681	20.69	19.92	30.56	20.83	19.97	30.62	20.91	20.35	30.26	TOTAL

JAN 12	1.230	0.769	1.476	1.230	0.769	1.476	1.230	0.769	1.476	1.230	0.769	1.476	JAN 12
FEB 12	1.150	0.719	1.343	1.150	0.719	1.381	1.150	0.719	1.381	1.150	0.719	1.381	FEB 12

* Actual ** New Minimum

MAINSTEM ENERGY

(GWh)

	MAX	MEAN	MIN	AVG	LAST	Jan-11	Feb-11	Mar-11
	<u>67-10</u>	<u>67-10</u>	<u>67-10</u>	<u>100-YR</u>	<u>YEAR</u>	<u>FCST</u>	<u>FCST</u>	<u>FCST</u>
JAN	915	710	425	729	558	729	745 *	745 * JAN
FEB	912	622	307	637	442	700	726	655 * FEB
MAR	1,040	637	308	554	352	692	691	710 MAR
APR	1,252	681	251	711	384	751	751	787 APR
MAY	1,344	779	285	928	664	962	953	944 MAY
JUN	1,386	834	286	912	626	988	980	971 JUN
JUL	1,484	944	289	1,023	816	1070	1062	1052 JUL
AUG	1,520	1,000	365	1,053	970	1114	1106	1096 AUG
SEP	1,464	891	393	973	1094	999	1006	1013 SEP
OCT	1,492	810	310	928	1081	826	837	852 OCT
NOV	1,425	734	244	857	1001	820	830	844 NOV
DEC	1,035	694	419	722	738	759	754	748 DEC
TOTAL		9,336		10,027	8,726	10,410	10,441	10,417 TOTAL

JAN 12

FEB 12

* Actual

** New Minimum

JAN 12

FEB 12

MAINSTEM ENERGY (GWh)

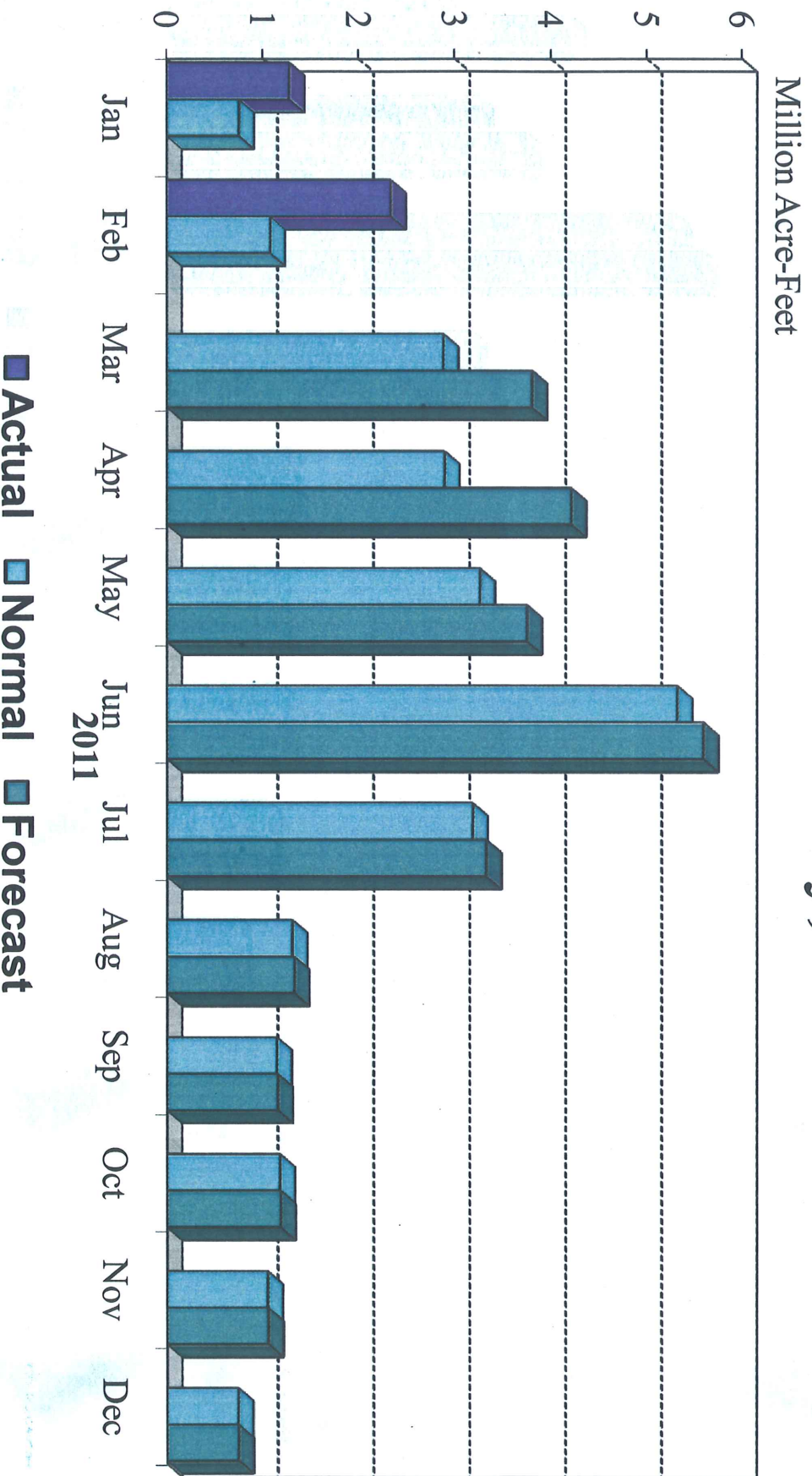
	Lower Basic FCST	Upper Basic FCST	Lower Basic FCST	Upper Basic FCST	Lower Basic FCST	Upper Basic FCST	
JAN	699	775	745 *	745 *	745 *	745 *	JAN
FEB	642	748	646	777	655 *	655 *	FEB
MAR	694	666	694	665	775	666	MAR
APR	807	871	794	871	835	909	APR
MAY	988	1369	989	1373	990	1351	MAY
JUN	988	1386	990	1388	986	1390	JUN
JUL	1049	1542	1050	1551	1046	1547	JUL
AUG	1036	1549	1038	1557	1034	1553	AUG
SEP	904	1465	905	1472	904	1468	SEP
OCT	756	1407	757	1414	757	1404	OCT
NOV	649	1354	650	1361	649	1349	NOV
DEC	533	885	534	885	534	885	DEC
TOTAL	9745	14017	9,792	14,059	9,910	13,922	TOTAL
JAN 12	632	942	629	942	628	942	JAN 12
FEB 12	575	861	572	861	572	861	FEB 12

* Actual

** New Minimum

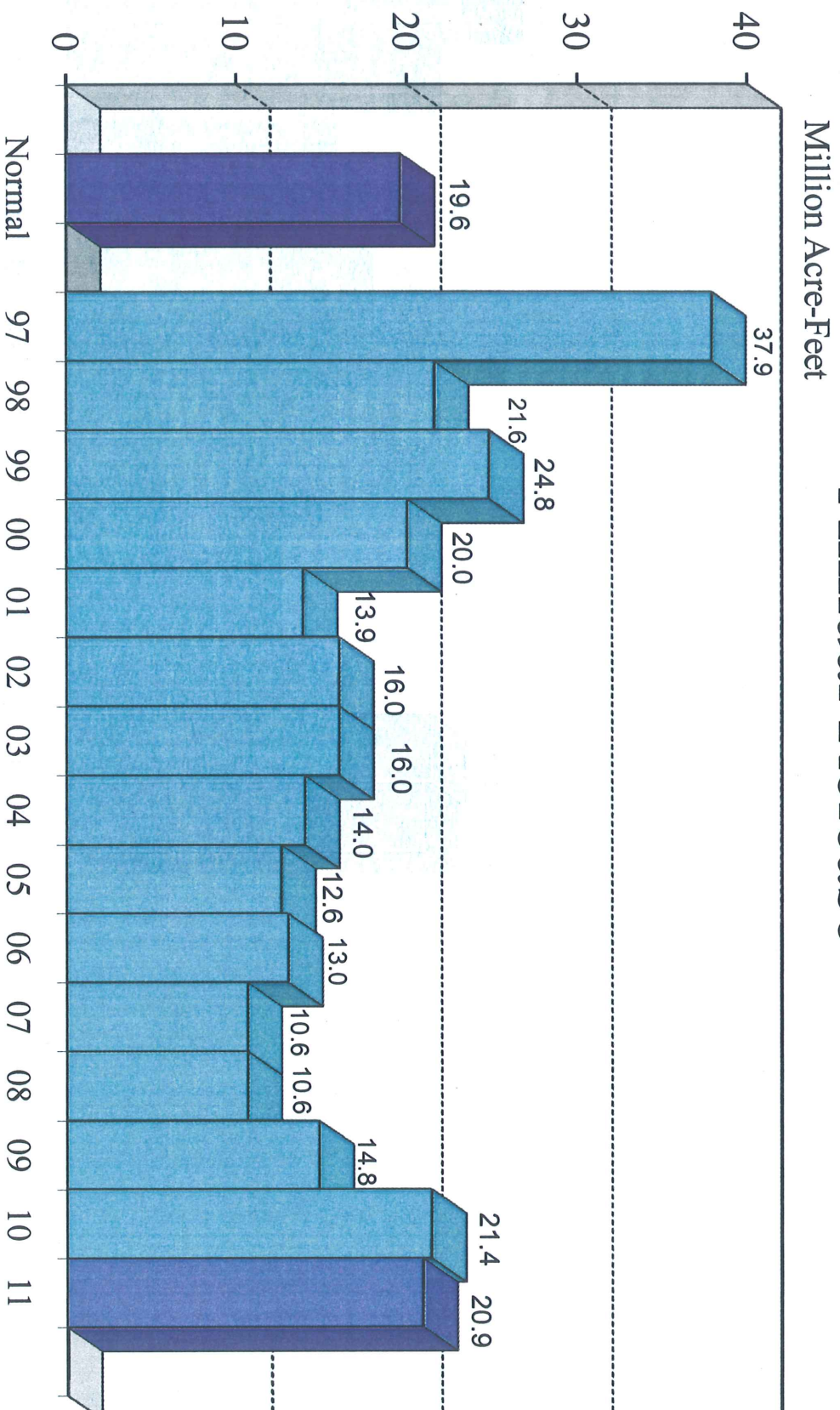
CY 2011 Missouri River Runoff

Above Sioux City, Iowa



Mar 1, 2011 Forecast – 29.8 MAF - 120%
Normal: 24.8 MAF

Gavins Point Annual Release



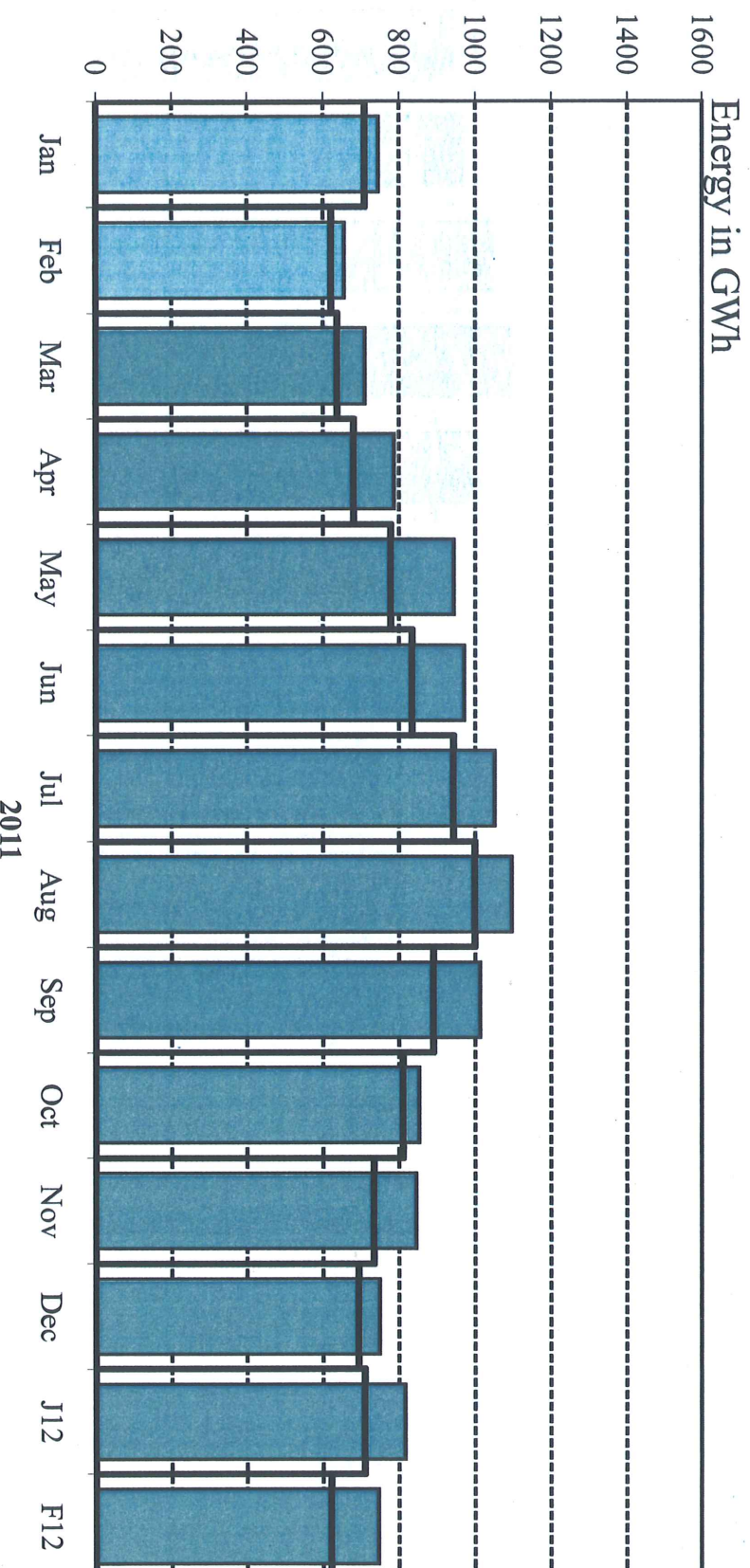
Mar 1, 2011 Forecast

Upper Basic: 30.3 MAF

Lower Basic: 20.4 MAF

Missouri River Mainstem System

Forecasted Energy Generation



■ Actual ■ Forecast □ 1967-2010

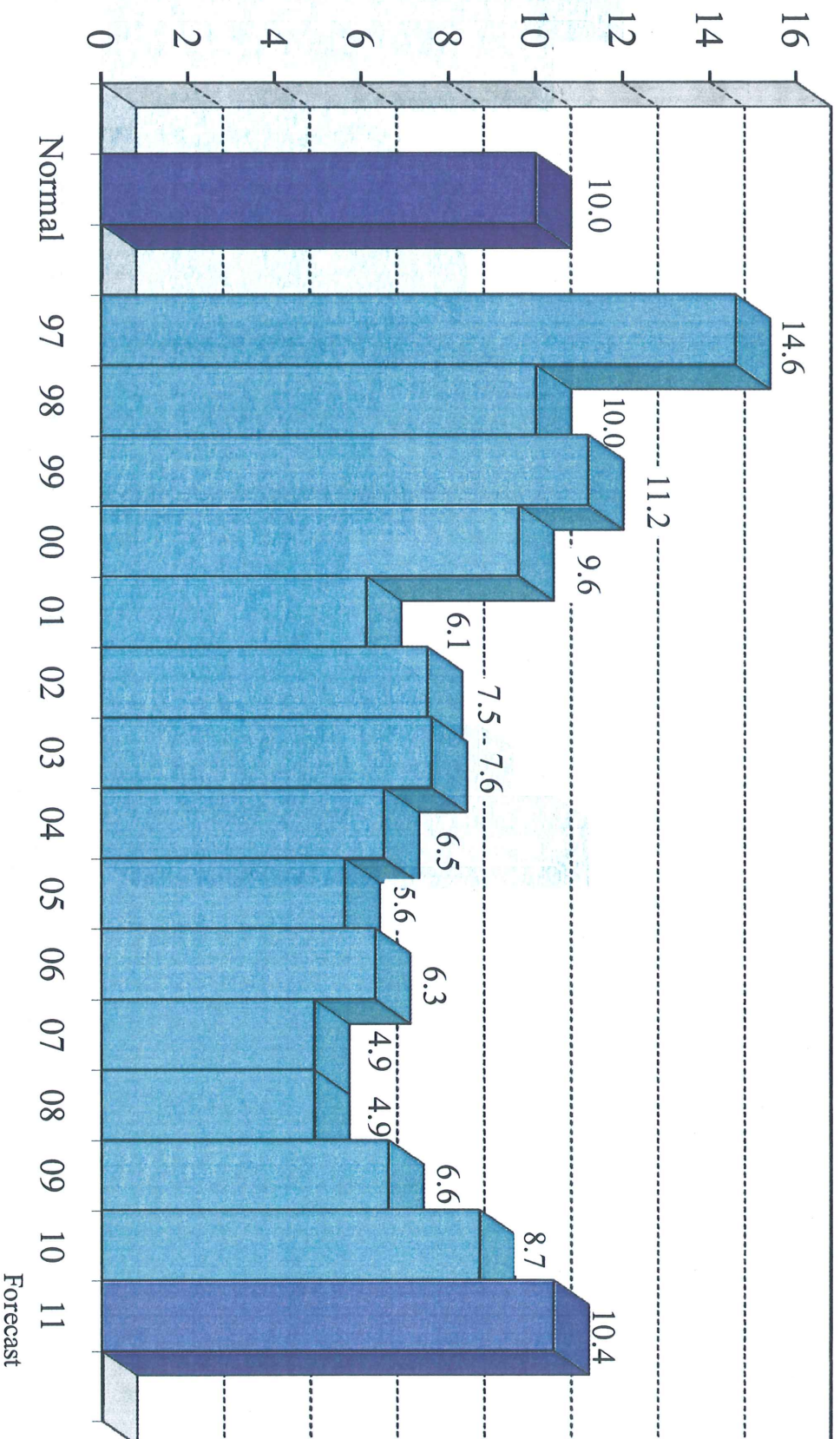
Upper Basic: 13,920 GWh

Basic: 10,420 GWh

Lower Basic: 9,910 GWh

Mainstem System Generation

Million Megawatt Hours



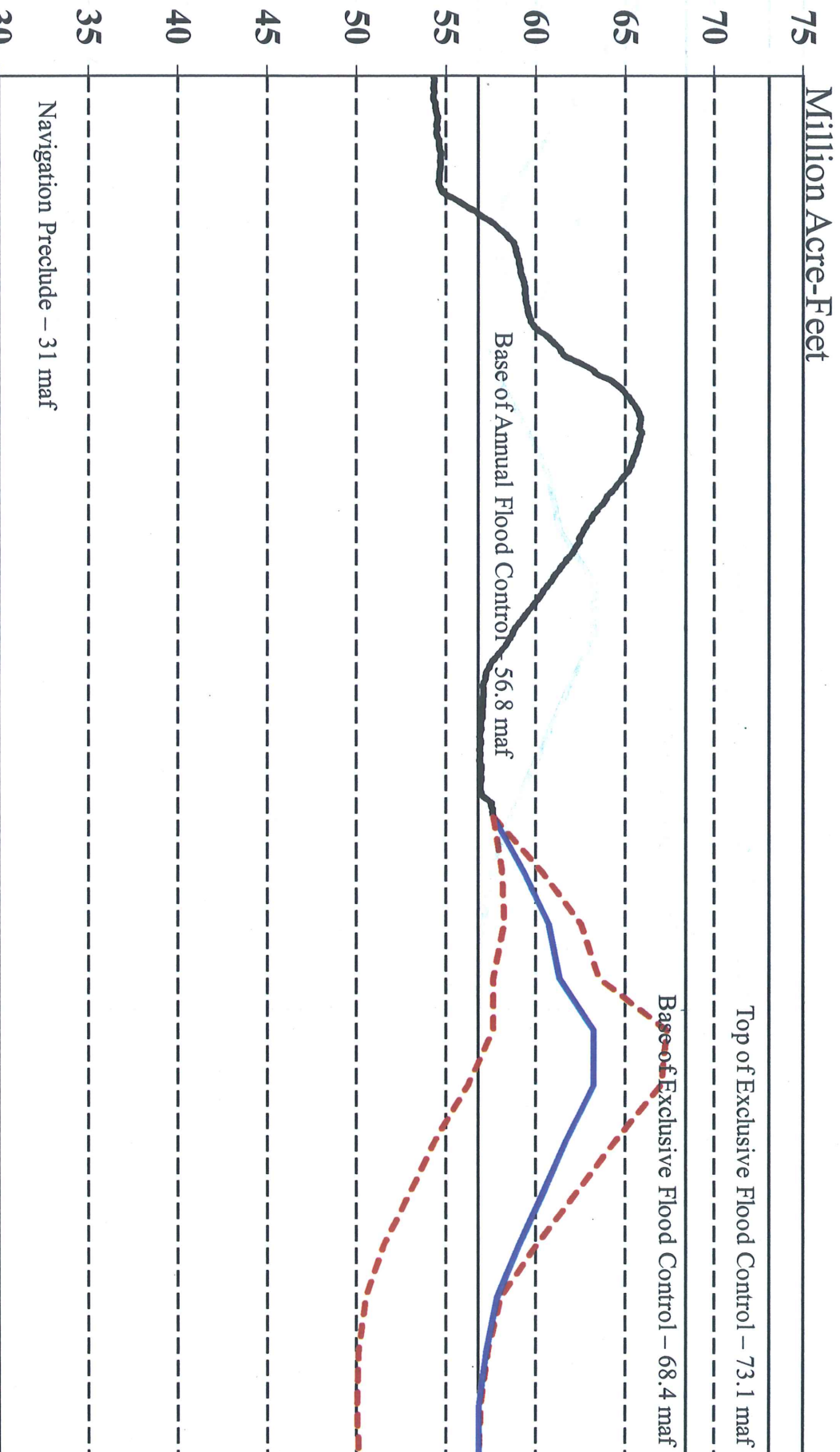
Mar 1, 2011 Forecast

Upper Basic: 13.9

Lower Basic: 9.9

System Storage

Mar 1st Forecast



J F M A M J J A S O N D J F M A M J J A S O N D J F

2010 2011 2012

NWO

From: [REDACTED] NWD02
Sent: Wednesday, March 02, 2011 2:02 PM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED]
NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
[REDACTED] NWO; [REDACTED] NWD02; [REDACTED] NWO; [REDACTED] NWO;
[REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO;
[REDACTED] NWD02; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO;
[REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
[REDACTED] NWD02; Johnston, Paul T NWO; [REDACTED] NWO; [REDACTED] NWO;
[REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
NWD02; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO;
[REDACTED] NWO; [REDACTED] NWO; Schenk, Kathryn M NWO; [REDACTED]
NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
I NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWD02; [REDACTED]
[REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWD02;
[REDACTED] NWO; Farmer, Monique L NWO; [REDACTED] NWO; [REDACTED]
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NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
[REDACTED] NWO; [REDACTED] NWO; [REDACTED] W NWO; [REDACTED] S
NWO; [REDACTED] NWO; [REDACTED] NWO; Blechinger, Erik T NWO; [REDACTED]
[REDACTED] NWK

Subject: Final March 2011 Monthly Reservoir Studies (UNCLASSIFIED)
Attachments: resfcstmar.pdf; Mar.2011-notes.docx; Runoff_Forecast_Mar2011.pdf

Classification: UNCLASSIFIED

Caveats: NONE

All-

Enclosed are the Final March Monthly Reservoir Studies. No changes from the draft studies.

Thanks,

Hydraulic Engineer
Missouri River Basin Water Management

Classification: UNCLASSIFIED

Caveats: NONE

MAR 1, 2011 / BASIC CONDITION / 29.8 MAF / BALANCED
 FULL SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 19.7 (CALC)
 Elevations & Storages are for Date Shown
 Avg Discharge & Energy are Monthly Values
 Date of Study: March 1, 2011

	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2012	2012
	28-Feb-11	31-Mar	30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	31-Jan	29FEB
FORT PECK -----													
ELEV FTMSL	2235.8	2237.0	2238.2	2238.9	2241.1	2240.7	2238.6	2237.6	2237.2	2237.2	2236.0	2234.8	2234.0
DISCH KCFS	9.8	7.0	8.0	11.0	11.5	11.5	11.5	8.9	6.5	6.5	11.0	11.5	11.5
GARRISON -----													
ELEV FTMSL	1838.5	1839.7	1841.2	1841.8	1844.7	1845.1	1843.2	1842.1	1841.3	1840.9	1840.2	1838.7	1837.5
DISCH KCFS	25.8	22.8	22.0	25.0	28.5	28.5	28.5	23.3	18.0	18.0	19.0	25.0	25.0
OAHE -----													
ELEV FTMSL	1607.6	1610.3	1611.7	1612.5	1613.7	1613.5	1612.4	1610.6	1609.3	1607.5	1606.7	1606.9	1607.5
DISCH KCFS	17.7	18.5	23.6	25.9	26.7	29.7	32.2	32.7	24.4	27.1	22.0	23.7	22.7
BIG BEND -----													
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	19.1	23.6	25.9	26.7	29.6	31.9	32.3	24.1	26.8	21.8	23.7	22.7
FORT RANDALL ----													
ELEV FTMSL	1350.6	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	19.7	23.2	28.1	29.0	30.1	31.9	34.7	34.2	34.3	20.2	18.3	17.0
GAVINS POINT ----													
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	23.3	26.7	30.7	31.6	31.6	33.2	36.0	36.0	36.0	22.0	20.0	20.0
SYSTEM -----													
STORAGE 1000 AF	57631	59301	60694	61333	63205	63159	61679	60370	58999	57806	57154	56826	56807
ENERGY GWh	10579	710	787	944	971	1052	1096	1013	852	844	748	816	745
PEAK POWER MW		2345	2357	2363	2387	2386	2378	2361	2338	2293	2255	2275	2282

MAR 1, 2011 / LOWER BASIC / 20.8 MAF / BALANCED
 FULL SERV / FULL NAV SEAS / PULSE MAR 5.0 MAY 13.2 (CALC)

	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2012	2012
	28-Feb-11	31-Mar	30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	31-Jan	29FEB
FORT PECK -----													
ELEV FTMSL	2235.8	2235.9	2236.0	2235.1	2235.2	2233.6	2231.5	2230.3	2229.9	2229.4	2227.7	2225.8	2224.3
DISCH KCFS	9.8	7.0	7.0	11.0	10.0	10.0	10.0	8.1	6.0	6.0	10.0	11.0	11.0
GARRISON -----													
ELEV FTMSL	1838.5	1838.1	1838.7	1838.9	1840.0	1839.1	1837.3	1836.2	1835.1	1834.4	1833.0	1830.9	1829.3
DISCH KCFS	25.8	22.8	18.0	20.0	23.5	23.5	23.5	19.6	16.0	16.0	19.0	24.0	24.0
OAHE -----													
ELEV FTMSL	1607.6	1609.0	1608.0	1606.3	1605.1	1602.7	1599.9	1597.2	1595.7	1594.7	1595.7	1597.3	1599.2
DISCH KCFS	17.7	22.3	28.8	31.3	31.6	33.7	33.6	30.9	22.1	19.5	13.2	16.6	15.9
BIG BEND -----													
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	23.0	28.8	31.3	31.6	33.6	33.2	30.3	21.7	19.1	13.0	16.6	15.9
FORT RANDALL ----													
ELEV FTMSL	1350.6	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	22.2	27.5	32.5	32.9	33.7	33.0	32.5	31.7	26.5	11.3	11.2	10.0
GAVINS POINT ----													
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	24.2	29.8	33.9	34.3	34.3	34.0	33.5	33.1	28.2	12.5	12.5	12.5
SYSTEM -----													
STORAGE 1000 AF	57631	58107	58227	57570	57560	56224	54421	52991	51528	50501	50135	49972	50079
ENERGY GWh	9709	775	835	990	986	1046	1034	904	757	649	534	628	572
PEAK POWER MW		2331	2327	2318	2315	2298	2276	2262	2239	2198	2166	2190	2201

MAR 1, 2011 / UPPER BASIC / 39.8 MAF / BALANCED
 FULL SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 20.0 (CALC)

	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2011	2012	2012
	28-Feb-11	31-Mar	30-Apr	31-May	30-Jun	31-Jul	31-Aug	30-Sep	31-Oct	30-Nov	31-Dec	31-Jan	29FEB
FORT PECK -----													
ELEV FTMSL	2235.8	2237.9	2240.3	2242.1	2247.9	2248.4	2245.8	2243.4	2240.9	2238.6	2236.8	2235.2	2234.0
DISCH KCFS	9.8	7.0	8.5	15.0	14.0	14.0	17.0	17.0	17.0	17.0	14.0	14.0	14.0
GARRISON -----													
ELEV FTMSL	1838.5	1841.1	1843.3	1843.6	1849.4	1850.3	1847.8	1845.5	1843.0	1841.0	1840.7	1838.9	1837.5
DISCH KCFS	25.8	22.8	26.0	40.0	40.0	40.0	40.0	40.0	40.0	39.5	22.0	30.0	30.0
OAHE -----													
ELEV FTMSL	1607.6	1611.5	1613.6	1615.0	1616.0	1614.0	1611.0	1608.9	1608.2	1607.1	1606.1	1606.5	1607.5
DISCH KCFS	17.7	15.7	26.8	39.3	43.9	52.9	54.3	51.8	43.8	46.2	27.1	27.2	26.1
BIG BEND -----													
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	16.4	26.8	39.3	43.9	52.8	54.0	51.5	43.5	46.1	27.0	27.2	26.1
FORT RANDALL ----													
ELEV FTMSL	1350.6	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1337.5	1339.3	1344.8	1350.0
DISCH KCFS	15.8	18.2	27.5	42.6	47.8	53.7	54.2	54.2	53.8	53.8	25.4	22.0	20.6
GAVINS POINT ----													
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0
DISCH KCFS	20.7	23.3	32.0	46.0	52.0	56.0	56.0	56.0	56.0	56.0	28.0	24.0	24.0
SYSTEM -----													
STORAGE 1000 AF	57631	60348	62501	63480	67279	66989	64482	62298	59983	57975	57299	56869	56811
ENERGY GWh	14324	666	909	1351	1390	1547	1553	1468	1404	1349	885	942	861
PEAK POWER MW		2357	2384	2391	2404	2393	2375	2366	2347	2288	2254	2274	2282

DATE OF STUDY 03/02/11	MAR 1, 2011 / BASIC CONDITION / 29.8 MAF / BALANCED										99001	9901	4	PAGE	1					
TIME OF STUDY 08:51:06	FULL SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 19.7 (CALC)										STUDY NO 6									
VALUES IN 1000 AF EXCEPT AS INDICATED																				
28FEB11	2011	2012																		
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB				
--FORT PECK--																				
NAT INFLOW	7536	300	140	180	757	1137	1704	863	353	333	385	192	90	102	329	360				
DEPLETION	418	-36	-17	-21	25	298	525	234	11	-75	-42	-41	-19	-22	-132	-118				
EVAPORATION	469							29	91	113	98	44	21	24	51					
MOD INFLOW	6649	335	156	201	732	839	1179	600	251	295	329	188	88	100	410	478				
RELEASE	7041	208	97	125	476	676	684	707	707	529	400	193	90	103	676	661				
STOR CHANGE	-393	127	59	76	256	163	495	-107	-456	-233	-70	-5	-2	-3	-266	-183				
STORAGE	15176	15303	15362	15439	15695	15857	16352	16245	15789	15556	15485	15480	15478	15475	15209	14967				
ELEV FTMSL	2235.8	2236.4	2236.7	2237.0	2238.2	2238.9	2241.1	2240.7	2238.6	2237.6	2237.2	2237.2	2237.2	2237.2	2236.0	2234.8				
DISCH KCFS	9.8	7.0	7.0	7.0	8.0	11.0	11.5	11.5	11.5	8.9	6.5	6.5	6.5	6.5	11.0	11.5				
POWER																				
AVE POWER MW		96	96	96	110	150	157	158	157	123	90	90	90	90	149	153				
PEAK POW MW		164	164	164	165	166	167	167	166	165	165	165	165	165	164	162				
ENERGY GWH	1161.4	34.6	16.2	20.8	79.4	111.7	113.1	117.3	116.7	88.2	66.7	32.2	15.0	17.2	110.9	106.8				
--GARRISON--																				
NAT INFLOW	11347	643	300	385	1328	1280	2740	1830	604	452	523	199	93	106	247	356				
DEPLETION	989	4	2	3	-3	177	765	602	107	-142	-25	-121	-56	-65	-115	-57				
CHAN STOR	-17	28			-10	-29	-5			25	23				-44	-5				
EVAPORATION	539							33	105	130	112	50	23	27	58					
REG INFLOW	16844	874	395	508	1797	1750	2654	1902	1099	1018	859	463	216	247	937	1074				
RELEASE	17156	774	305	321	1309	1537	1696	1752	1752	1387	1107	536	250	286	1168	1438				
STOR CHANGE	-312	101	89	186	488	213	959	149	-653	-369	-248	-73	-34	-39	-232	-364				
STORAGE	18418	18519	18608	18795	19283	19496	20454	20604	19950	19581	19333	19261	19227	19188	18957	18470				
ELEV FTMSL	1838.5	1838.8	1839.1	1839.7	1841.2	1841.8	1844.7	1845.1	1843.2	1842.1	1841.3	1841.1	1841.0	1840.9	1840.2	1837.5				
DISCH KCFS	25.8	26.0	22.0	18.0	22.0	25.0	28.5	28.5	28.5	23.3	18.0	18.0	18.0	18.0	19.0	25.0				
POWER																				
AVE POWER MW		324	275	226	278	316	363	366	365	297	229	228	228	228	240	311				
PEAK POW MW		473	474	476	482	484	499	500	498	487	482	481	481	480	478	468				
ENERGY GWH	2628.3	116.7	46.3	48.9	200.1	235.3	261.4	272.5	271.4	213.6	170.0	82.1	38.3	43.7	178.7	216.3				
--OAH--																				
NAT INFLOW	2711	300	140	180	620	400	470	190	65	111	66	34	16	18	12	90				
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	12	28				
CHAN STOR	2	-1	16	15	-15	-11	-13			19	20				-4	-24				
EVAPORATION	535							34	105	130	111	50	23	26	56					
REG INFLOW	18653	1049	450	502	1865	1855	2008	1736	1596	1359	1092	518	242	277	1097	1500				
RELEASE	18698	466	232	438	1402	1592	1588	1824	1980	1945	1502	716	368	527	1354	1500				
STOR CHANGE	-46	583	218	64	463	263	420	-89	-385	-586	-410	-198	-126	-251	-257	192				
STORAGE	18877	19460	19678	19742	20205	20468	20887	20799	20414	19829	19419	19221	19095	18845	18588	18639				
ELEV FTMSL	1607.6	1609.5	1610.1	1610.3	1611.7	1612.5	1613.7	1613.5	1612.4	1610.6	1609.3	1608.7	1608.3	1607.5	1606.7	1607.5				
DISCH KCFS	17.7	15.7	16.7	24.6	23.6	25.9	26.7	29.7	32.2	32.7	24.4	24.1	26.5	33.2	22.0	22.7				
POWER																				
AVE POWER MW		204	219	321	310	342	354	394	426	429	319	313	343	429	284	293				
PEAK POW MW		718	722	723	730	734	740	739	733	724	718	714	712	708	704	708				
ENERGY GWH	2962.3	73.4	36.8	69.4	222.9	254.3	254.9	293.2	317.0	309.0	237.4	112.7	57.7	82.3	211.0	203.9				
--BIG BEND--																				
EVAPORATION	103						6	20	25	22	10	5	5	11						
REG INFLOW	18595	466	232	438	1402	1592	1588	1818	1961	1920	1480	706	363	522	1342	1308				
RELEASE	18636	507	232	438	1402	1592	1588	1818	1961	1920	1480	707	363	522	1342	1308				
STORAGE	1662	1621	1621	1621	1621	1621	1621	1621	1621	1622	1622	1621	1621	1621	1621	1621				
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0				
DISCH KCFS	17.6	17.0	16.7	24.6	23.6	25.9	26.7	29.6	31.9	32.3	24.1	23.8	26.2	32.9	21.8	22.7				
POWER																				
AVE POWER MW		81	79	116	110	121	125	138	149	153	118	119	131	164	109	109				
PEAK POW MW		522	520	519	509	509	509	509	509	517	538	538	538	538	538	529				
ENERGY GWH	1078.6	29.2	13.3	25.1	79.4	90.2	89.9	103.0	111.0	110.0	87.7	42.9	22.0	31.4	81.4	75.8				
--FORT RANDALL--																				
NAT INFLOW	930	111	52	67	170	147	152	57	39	38	5	3	1	2	12	49				
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3				
EVAPORATION	117							8	25	31	25	9	4	4	10					
REG INFLOW	19370	617	283	504	1568	1730	1728	1849	1959	1919	1459	700	360	518	1343	1354				
RELEASE	19415	517	233	459	1382	1730	1728	1849	1959	2065	2102	1021	476	544	1241	980				
STOR CHANGE	-45	100	50	45	186			0	0	-146	-643	-321	-116	-26	102	374				
STORAGE	3168	3268	3318	3363	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2399	3123				
ELEV FTMSL	1350.6	1351.8	1352.4	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1350.0				
DISCH KCFS	15.8	17.4	16.8	25.7	23.2	28.1	29.0	30.1	31.9	34.7	34.2	34.3	34.3	34.3	20.2	17.0				
POWER																				
AVE POWER MW		143	139	213	194	237	245	253	268	289	273	258	250	247	148	135				
PEAK POW MW		345	347	349	356	356	356	356	356	350	319	296	287	285	293	339				
ENERGY GWH	1902.5	51.3	23.4	46.0	140.0	176.4	176.1	188.3	199.4	208.4	203.2	93.0	42.0	47.5	109.9	94.3				
--GAVINS POINT--																				
NAT INFLOW	1755	122	57	73	207	186	178	137	115	111	120	59	28	31	100	130				
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10					
CHAN STOR	-4	-3	1	-17	5	-9	-2	-2	-3	-5	1	0	0	0	26	2				
EVAPORATION	36							2	6	9	8	3	2	2	4					
REG INFLOW	21016	637	292	516	1589	1888	1880	1943	2054	2167	2214	1071	500	571	1353	1112				
RELEASE	21004	625	292	516	1589	1888	1880	1943	2041	2142	2214	1071	500	571	1353	1150				
STOR CHANGE	12	12						13	25							-38				
STORAGE	330	342	342	342	342	342	342	342	355	380	380	380	380	380	380	342				
ELEV FTMSL	1205.5	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.0	1206.5	1207.5	1207.5	1207.5	1207.5	1207.5	1207.5	1206.0				
DISCH KCFS	20.7	21																		

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STUDY NO 8

INI-SUM 15MAR 22MAR 31MAR 30APR 31MAY 30JUN 31JUL 31AUG 30SEP 31OCT 15NOV 22NOV 30NOV 31DEC 31JAN 29FEB

DATE OF STUDY 03/02/11	MAR 1, 2011 / UPPER BASIC / 39.8 MAF / BALANCED										99001	9901	9901	PAGE	1	
TIME OF STUDY 08:58:33	FULLS SERV / FULL NAV SEAS 10 DAY EXT / PULSE MAR 5.0 MAY 20.0 (CALC)										STUDY NO					5
VALUES IN 1000 AF EXCEPT AS INDICATED																
28FEB11	2011											2012				
INI-SUM	15MAR	22MAR	31MAR	30APR	31MAY	30JUN	31JUL	31AUG	30SEP	31OCT	15NOV	22NOV	30NOV	31DEC	31JAN	29FEB
--FORT PECK--																
NAT INFLOW	10332	405	189	243	1022	1592	2726	1208	424	400	462	231	108	123	395	432
DEPLETION	191	-24	-11	-14	-23	260	513	204	-62	-129	-89	-30	-14	-16	-123	-105
EVAPORATION	340							23	73	91	78	18	8	9	39	
MOD INFLOW	9801	428	200	257	1045	1332	2213	981	413	438	473	242	113	129	479	537
RELEASE	10192	208	97	125	506	922	833	861	1045	1011	1045	506	236	270	861	805
STOR CHANGE	-391	220	103	132	539	410	1380	120	-633	-573	-572	-263	-123	-140	-381	-268
STORAGE	15176	15396	15499	15631	16170	16579	17959	18079	17446	16874	16302	16039	15916	15775	15394	14785
ELEV FTMSL	2235.8	2236.8	2237.3	2237.9	2240.3	2242.1	2247.9	2248.4	2245.8	2243.4	2240.9	2239.7	2239.2	2238.6	2236.8	2234.0
DISCH KCFS	9.8	7.0	7.0	7.0	8.5	15.0	14.0	14.0	17.0	17.0	17.0	17.0	17.0	17.0	14.0	14.0
POWER																
AVE POWER MW		96	96	97	118	167	170	172	171	170	168	166	166	165	165	162
PEAK POW MW		164	165	165	167	168	172	173	170	169	167	166	166	165	164	162
ENERGY GWH	1382.7	34.6	16.2	20.8	84.7	124.4	122.5	128.3	127.5	122.1	124.8	59.9	27.8	31.7	122.6	113.1
--GARRISON--																
NAT INFLOW	15733	868	405	520	1793	1792	4384	2562	725	542	628	239	112	127	296	427
DEPLETION	997	4	2	3	18	100	802	621	93	-133	0	-118	-55	-63	-117	-64
CHAN STOR	-39	28			-15	-63	10		-28	0	0	0	0	0	29	
EVAPORATION	384						27		84	103	87	20	9	11	44	
REG INFLOW	24505	1099	500	643	2266	2552	4425	2775	1566	1583	1586	842	393	450	1260	1296
RELEASE	24816	774	305	321	1547	2460	2380	2460	2379	2379	2460	1190	555	603	1353	1726
STOR CHANGE	-311	326	194	321	719	92	2045	316	-894	-796	-874	-348	-162	-153	-93	-429
STORAGE	18418	18744	18938	19260	19979	20071	22115	22431	21537	20741	19868	19520	19358	19204	19111	18107
ELEV FTMSL	1838.5	1839.5	1840.1	1841.1	1843.3	1843.6	1849.4	1850.3	1847.8	1845.5	1843.0	1841.9	1841.4	1841.0	1840.7	1837.5
DISCH KCFS	25.8	26.0	22.0	18.0	26.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	38.0	30.0	30.0
POWER																
AVE POWER MW		325	277	228	330	491	501	503	503	501	494	487	484	463	278	372
PEAK POW MW		476	478	481	498	498	503	504	502	500	498	484	483	481	480	468
ENERGY GWH	3743.8	117.0	46.5	49.2	237.4	365.3	360.6	374.5	374.0	360.7	367.5	175.3	81.2	89.0	206.9	259.1
--OAH--																
NAT INFLOW	3744	405	189	243	837	560	752	266	78	133	79	40	19	21	14	108
DEPLETION	681	24	11	14	49	71	145	173	116	28	-10	1	0	1	18	28
CHAN STOR	-13	-1	15	15	-30	-52			0	0	0	0	0	8	-32	
EVAPORATION	363						26		79	96	82	19	9	10	42	
REG INFLOW	27503	1154	499	565	2305	2897	2527	2342	2388	2466	1210	565	621	1363	1808	1806
RELEASE	27549	381	194	389	1596	2419	2612	3325	3336	3083	2693	1286	634	831	1667	1502
STOR CHANGE	-46	773	305	176	709	477	375	-725	-994	-695	-227	-76	-69	-210	-304	304
STORAGE	18877	19650	19955	20132	20840	21318	21693	20967	19974	19278	19051	18975	18906	18697	18392	18831
ELEV FTMSL	1607.6	1610.1	1611.0	1611.5	1613.6	1615.0	1616.0	1614.0	1611.0	1608.9	1608.2	1608.0	1607.7	1607.1	1606.1	1607.5
DISCH KCFS	17.7	12.8	14.0	21.8	26.8	39.3	43.9	52.9	54.3	51.8	43.8	43.2	45.6	52.4	27.1	26.1
POWER																
AVE POWER MW		167	184	287	355	523	586	690	694	659	565	556	586	655	348	336
PEAK POW MW		721	726	729	740	747	752	742	727	715	712	710	709	706	703	708
ENERGY GWH	4319.4	60.1	30.9	62.0	255.5	389.0	422.0	513.6	516.5	474.2	420.0	200.0	98.4	125.7	258.7	233.7
--BIG BEND--																
EVAPORATION	71						5		15	19	16	4	2	2	9	
REG INFLOW	27478	381	194	389	1596	2419	2612	3247	3321	3064	2677	1282	632	829	1659	1502
RELEASE	27519	422	194	389	1596	2419	2612	3247	3321	3064	2677	1282	632	829	1659	1502
STOR CHANGE	1662	1621	1621	1621	1621	1621	1621	1621	1621	1621	1622	1622	1622	1622	1622	1622
STORAGE	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
ELEV FTMSL	1420.7	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0	1420.0
DISCH KCFS	17.6	14.2	14.0	21.8	26.8	39.3	43.9	52.9	54.0	51.5	43.5	43.1	45.5	52.3	27.0	26.1
POWER																
AVE POWER MW		67	66	103	126	184	205	247	252	243	211	213	225	257	135	125
PEAK POW MW		522	520	519	509	509	509	509	509	518	538	538	538	538	538	529
ENERGY GWH	1586.5	24.3	11.1	22.3	90.4	136.9	147.8	183.6	187.7	175.2	157.1	76.7	37.7	49.3	100.3	87.0
--FORT RANDALL--																
NAT INFLOW	1279	151	70	90	230	206	243	80	47	46	6	4	2	2	14	59
DEPLETION	80	1	1	1	4	9	12	18	15	7	1	1	0	1	3	3
EVAPORATION	81						6	19	24	18	18	4	2	2	7	
REG INFLOW	28638	571	263	478	1822	2616	2843	3303	3334	3080	2663	1281	631	828	1665	1558
RELEASE	28683	471	213	433	1636	2616	2843	3303	3334	3226	3306	1602	747	854	1562	1184
STOR CHANGE	-44	100	50	45	186	0	0	0	-146	-643	-321	-116	-26	-103	350	374
STORAGE	3168	3268	3318	3363	3549	3549	3549	3549	3549	3403	2760	2439	2323	2297	2400	3124
ELEV FTMSL	1350.6	1351.8	1352.4	1353.0	1355.2	1355.2	1355.2	1355.2	1355.2	1353.5	1345.0	1340.0	1338.0	1337.5	1339.3	1350.0
DISCH KCFS	15.8	15.8	15.4	24.3	27.5	42.6	47.8	53.7	54.2	54.2	53.8	53.8	53.8	53.8	25.4	20.6
POWER																
AVE POWER MW		130	127	201	230	339	356	355	355	352	335	306	290	284	185	163
PEAK POW MW		345	347	349	356	356	356	355	355	349	317	295	286	283	294	339
ENERGY GWH	2405.3	46.8	21.4	43.4	165.4	251.9	256.4	264.2	264.2	253.6	249.4	110.3	48.8	54.6	137.9	113.6
--GAVINS POINT--																
NAT INFLOW	2311	166	77	99	279	260	285	192	138	133	144	71	33	38	120	156
DEPLETION	114	0	0	0	5	19	24	39	10	-5	2	5	2	3	10	
CHAN STOR	-11	0	1	-17	-6	-29	-10	-11	-1	0	1	0	0	0	53	3
EVAPORATION	24						2	5	6	6	6	1	1	1	3	
REG INFLOW	30844	637	292	516	1904	2829	3094	3443	3456	3357	3443	1666	778	889	1722	1343
RELEASE	30832	625	292	516	1904	2829	3094	3443	3443	3332	3443	1666	778	889	1722	1381
STOR CHANGE	12	12					342	342	355	380	380	380	380	380	380	-38
STORAGE	330	342	342	342												

March 2nd, 2011 Reservoir Monthly Study Call

General Conditions:

1. Past Runoff

Last month's runoff was 217% of normal.

Ranging from about 570% in the Sioux City reach to 128% in the Garrison reach. Due to some early plains snow melt runoff and wet soil conditions.

2. Current Mountain Snow Pack (May thru July runoff)

110% of normal – above Ft. Peck

107% of normal – between Ft. Peck and Garrison

108% of normal – total above Garrison

Normally, 79 percent of the peak accumulation has occurred by March 1.

Current Plains Snow Pack (March and April Runoff).

Fort Peck reach – light snowpack (1”-3” SWE)

Garrison reach – light to moderate snowpack (2” - 5” SWE)

Oahe reach – light snowpack (1” – 3” SWE)

Big Bend, Fort Randall, and Gavins Point reaches – light snowpack (0” – 1” SWE)

Gavins to Sioux City Reach – moderate to heavy snowpack. north of Mitchell and Sioux Falls, SD (3” – 6” SWE)

3. Forecasted Annual Runoff

For March thru May - Higher probability of above normal precipitation in the Northern Rockies and Northern Plains in March combined with lower than normal temperatures should increase the likelihood that the Northern Plains snowpack and mountain snowpack will persist later into spring with limited melting.

Basic – 29.8 MAF (120% of Normal)

UB – 39.8 MAF

LB – 20.8 MAF

4. Gavins Releases

February – 20.7 kcfs.

Currently 21.0 kcfs. Will continue to release 21.0 kcfs through late March when flows will be increased in support of navigation and the potential spring pulse.

Monthly Studies

1. This Water-Year Balancing – Ended February 2011 with system storage at 57.6 maf (0.8 MAF above the target of 56.8 MAF) and upper reservoirs unbalanced:

Fort Peck +0.8 feet, Garrison +0.2 feet and Oahe -0.7 feet.

2. Next Water-Year Balancing – Will be 100% full at Feb 2012 – Basic and upper simulation.

The 3 reservoirs will be below the base of flood control by the end of Feb 2012 for lower basic.

Will be balanced for all 3 conditions.

3. Navigation Service Levels

Basic – Full service levels for entire season.

Lower Basic – Full service for entire season.

Upper Basic – Flood control releases all year (including spillway releases.)

4. Navigation Season Lengths

0 Days shortening for lower basic.

10 Day extension for basic and upper basic

5. Spring Pulses

Will have March and May Spring Pulses for all runoff scenarios

March – 5 kcfs for two days

May – Basic – 19.3 (10.0) kcfs for two days

Lower Basic – 13.2 (9.7) kcfs for two days

Upper Basic – 20.0 (potentially no pulse due to flood control releases).

* Pulse value shown is based on technical criteria. Pulse value in parentheses is due to downstream flow limits.

6. Energy Generation

Last month – 655 MkWhrs actual – long-term average for February 637 MkWhrs

This year forecast – Basic Simulation – 10.4 BKWhrs. Long-term average approx 10.0 BKWhrs

7. Spring Forage Fish Spawn

Will “favor” Garrison this year if there’s not enough water to keep all 3 reservoirs rising

Basic – All three reservoirs rise during period

Lower Basic – Only Garrison rises during period

Upper Basic – All three reservoirs rise during period

Missouri River Basin
Calendar Year 2011
Forecasted

1-Mar-11

Reach Above	Fort Peck	Garrison	Oahe	Fort Randall	Gavins Point	Sioux City	Summation above Gavins Point	Summation above Sioux City	Accumulated Summation above Sioux City
Values in 1000 Acre Feet									
JAN 2011	(History) 431	299	120	86	67	273	1,003	1,276	1,276
NORMAL	312	261	12	25	100	40	710	750	750
DEPARTURE	119	38	108	61	-33	233	293	526	526
% OF NORM	138%	115%	998%	346%	67%	682%	141%	170%	170%
FEB 2011	580	457	318	217	236	524	1,808	2,333	3,609
NORMAL	360	356	90	49	130	92	985	1,077	1,827
DEPARTURE	220	101	228	168	106	432	823	1,256	1,782
% OF NORM	161%	128%	354%	443%	182%	570%	184%	217%	198%
MAR 2011	(Forecast) 619	1,328	620	230	253	752	3,050	3,802	7,411
NORMAL	596	1,003	567	209	206	299	2,581	2,880	4,707
DEPARTURE	23	325	53	21	47	453	469	922	2,704
% OF NORM	104%	132%	109%	110%	123%	252%	118%	132%	157%
APR 2011	757	1,328	620	170	207	1,129	3,081	4,210	11,621
NORMAL	649	1,080	481	144	180	360	2,534	2,894	7,601
DEPARTURE	108	248	139	26	27	769	547	1,316	4,020
% OF NORM	117%	123%	129%	118%	115%	314%	122%	145%	153%
MAY 2011	1,137	1,280	400	147	186	600	3,150	3,750	15,371
NORMAL	1,081	1,245	312	147	186	292	2,971	3,263	10,864
DEPARTURE	56	35	88	0	0	308	179	487	4,507
% OF NORM	105%	103%	128%	100%	100%	205%	106%	115%	141%
JUN 2011	1,704	2,740	470	152	178	350	5,244	5,594	20,965
NORMAL	1,612	2,667	423	152	178	286	5,032	5,318	16,182
DEPARTURE	92	73	47	0	0	64	212	276	4,783
% OF NORM	106%	103%	111%	100%	100%	122%	104%	105%	130%
JUL 2011	863	1,830	190	57	137	250	3,077	3,327	24,292
NORMAL	819	1,776	179	57	137	218	2,968	3,186	19,368
DEPARTURE	44	54	11	0	0	32	109	141	4,924
% OF NORM	105%	103%	106%	100%	100%	115%	104%	104%	125%
AUG 2011	353	604	68	39	115	150	1,179	1,329	25,621
NORMAL	353	604	65	39	115	131	1,176	1,307	20,675
DEPARTURE	0	0	3	0	0	19	3	22	4,946
% OF NORM	100%	100%	105%	100%	100%	115%	100%	102%	124%
SEP 2011	333	452	111	38	111	110	1,045	1,155	26,776
NORMAL	333	452	111	38	111	99	1,045	1,144	21,819
DEPARTURE	0	0	0	0	0	11	0	11	4,957
% OF NORM	100%	100%	100%	100%	100%	111%	100%	101%	123%
OCT 2011	385	523	66	5	120	86	1,099	1,185	27,961
NORMAL	385	523	66	5	120	78	1,099	1,177	22,996
DEPARTURE	0	0	0	0	0	8	0	8	4,965
% OF NORM	100%	100%	100%	100%	100%	110%	100%	101%	122%
NOV 2011	384	398	67	6	118	83	973	1,056	29,017
NORMAL	384	398	67	6	118	76	973	1,049	24,045
DEPARTURE	0	0	0	0	0	7	0	7	4,972
% OF NORM	100%	100%	100%	100%	100%	109%	100%	101%	121%
DEC 2011	329	247	0	12	100	56	688	744	29,762
NORMAL	329	247	0	12	100	52	688	740	24,785
DEPARTURE	0	0	0	0	0	4	0	4	4,976
% OF NORM	100%	100%	100%	100%	100%	108%	100%	101%	120%
Calendar Year Totals									
NORMAL	7,875	11,487	3,050	1,160	1,828	4,363	25,399	29,762	
DEPARTURE	7,213	10,612	2,373	883	1,681	2,023	22,762	24,785	
% OF NORM	662	875	676	277	147	2,340	2,636	4,976	
	109%	108%	128%	131%	109%	216%	112%	120%	

[REDACTED] NWO

From: Farhat, Jody S NWD02
Sent: Thursday, March 03, 2011 9:43 AM
To: [REDACTED] NWD
Subject: RE: Proposed Slide deck for Kickoff Event. (UNCLASSIFIED)
Attachments: MRBWM NWD CMT brief 4 Mar 2011.pptx

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED]
I added 4 weather slides to my presentation. You can move them around as you see fit.

Jody

-----Original Message-----

From: [REDACTED] NWD
Sent: Wednesday, March 02, 2011 7:43 PM
To: [REDACTED] NWD
Cc: [REDACTED] NWK; Farhat, Jody S NWD02; [REDACTED] NWO; [REDACTED] NWP; Tipton, Robert A Col NWD
Subject: Proposed Slide deck for Kickoff Event.

John,

I am at the 95% solution on these slides. I just need to spell check, font check, small edits etc. Please review and provide any comments or adjustments to make a better presentation. I will finalize in the morning and place on the COP site.

Jody,

I will follow up with you in the morning to make sure we roll your weather slides in. I am anticipating you having the update from NWS around 0900 CST?

[REDACTED]
Which slide will be the queue for Gregg to pull up the Viewer?

All are welcomed to make comments before tomorrow.

Thanks everyone for helping put this together!

V/R

[REDACTED]
Contingency Operations Officer
Readiness and Contingency Operations
Northwestern Division
US Army Corps of Engineers
Desk: [REDACTED]
Cell: [REDACTED]
[REDACTED]@usace.army.mil
[REDACTED]@usace.army.smil.mil

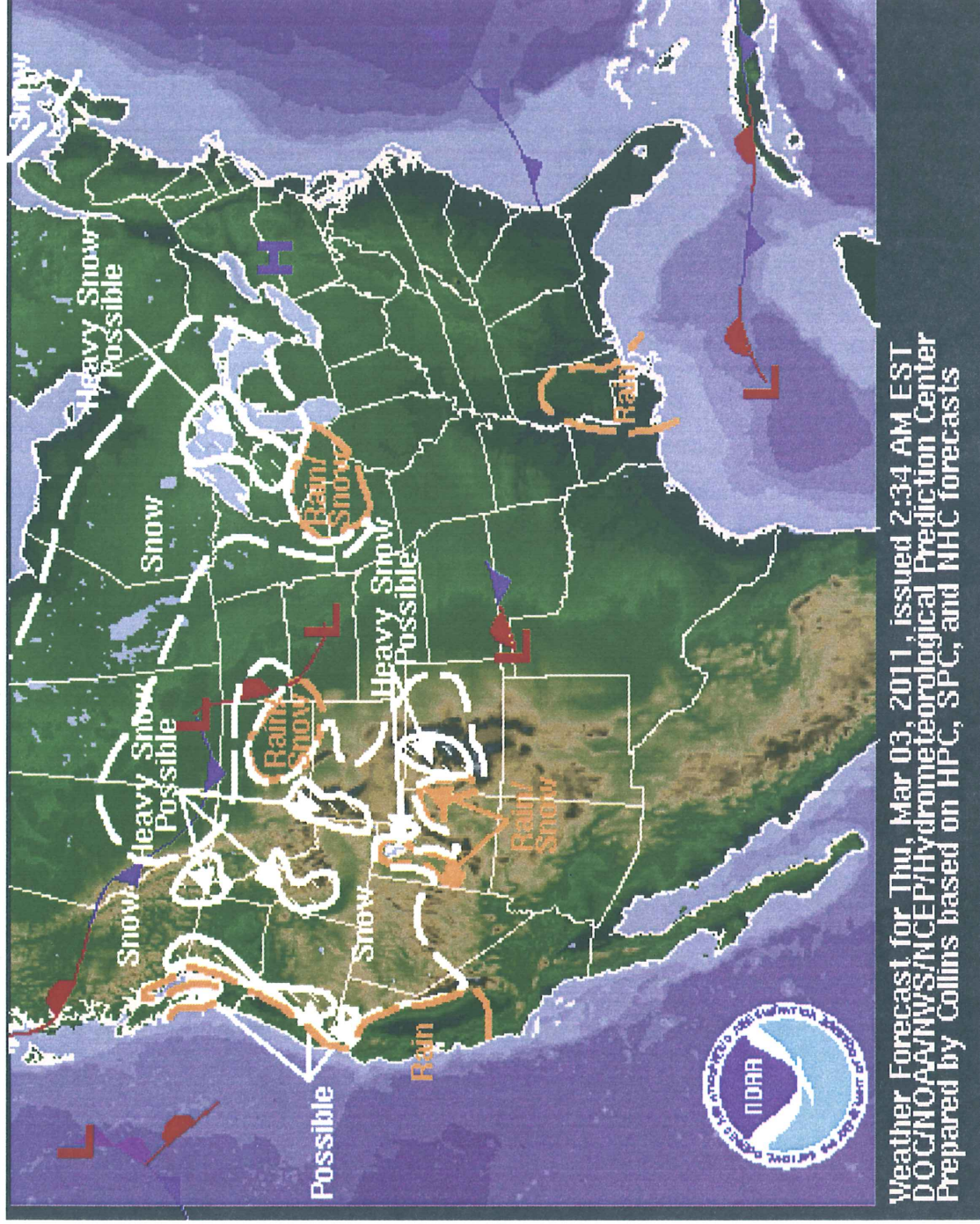
Emergency Cell: [REDACTED]

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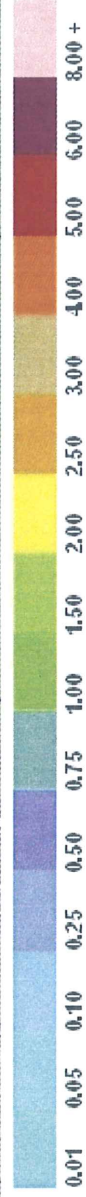
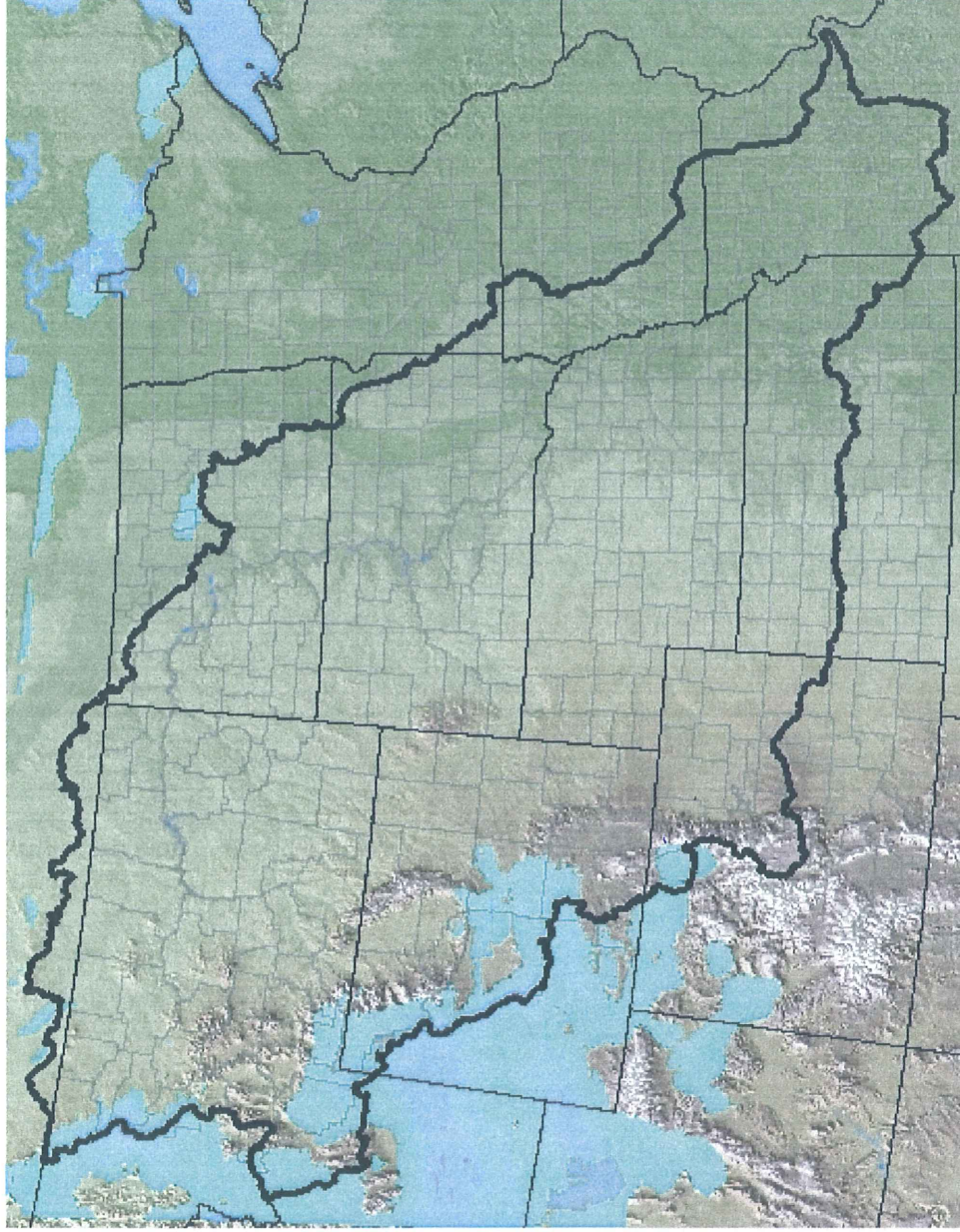
Classification: UNCLASSIFIED

Caveats: NONE

National Weather Forecast



24 hr Precip Ending 0600 3 Mar 2011



MBRFC 24-Hour Gage Biased Estimated Rainfall (inches)

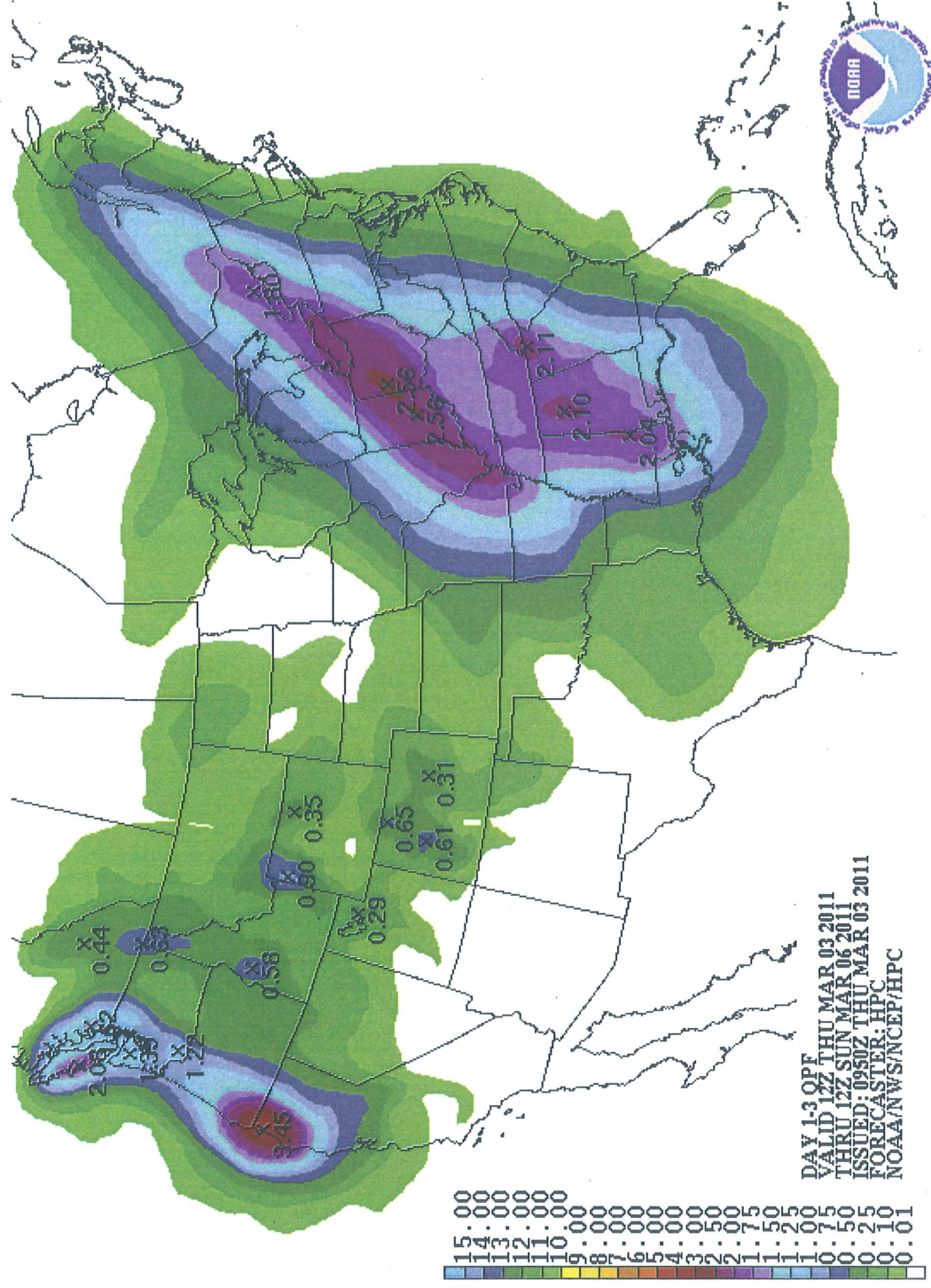
Ending: 3/3/2011 at 6:00AM CST

Created: 3/3/2011 at 8:32 AM CST

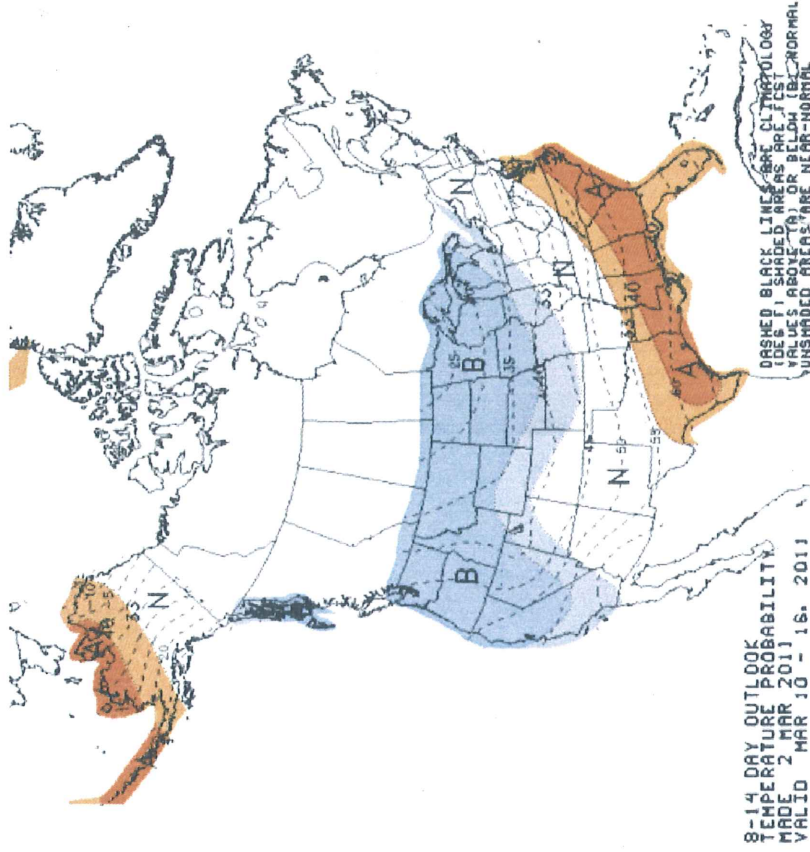
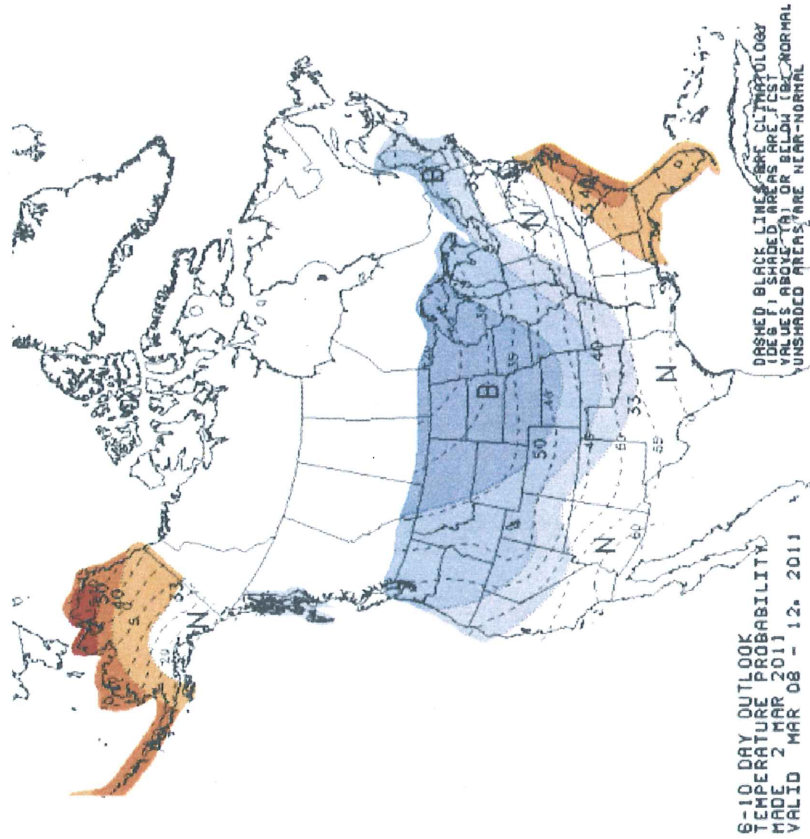


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QPF Day 1-3 Total Ending 0600 06 Mar 2011



Temperature Forecasts



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Missouri River Mainstem Reservoir System

Summary for 2011

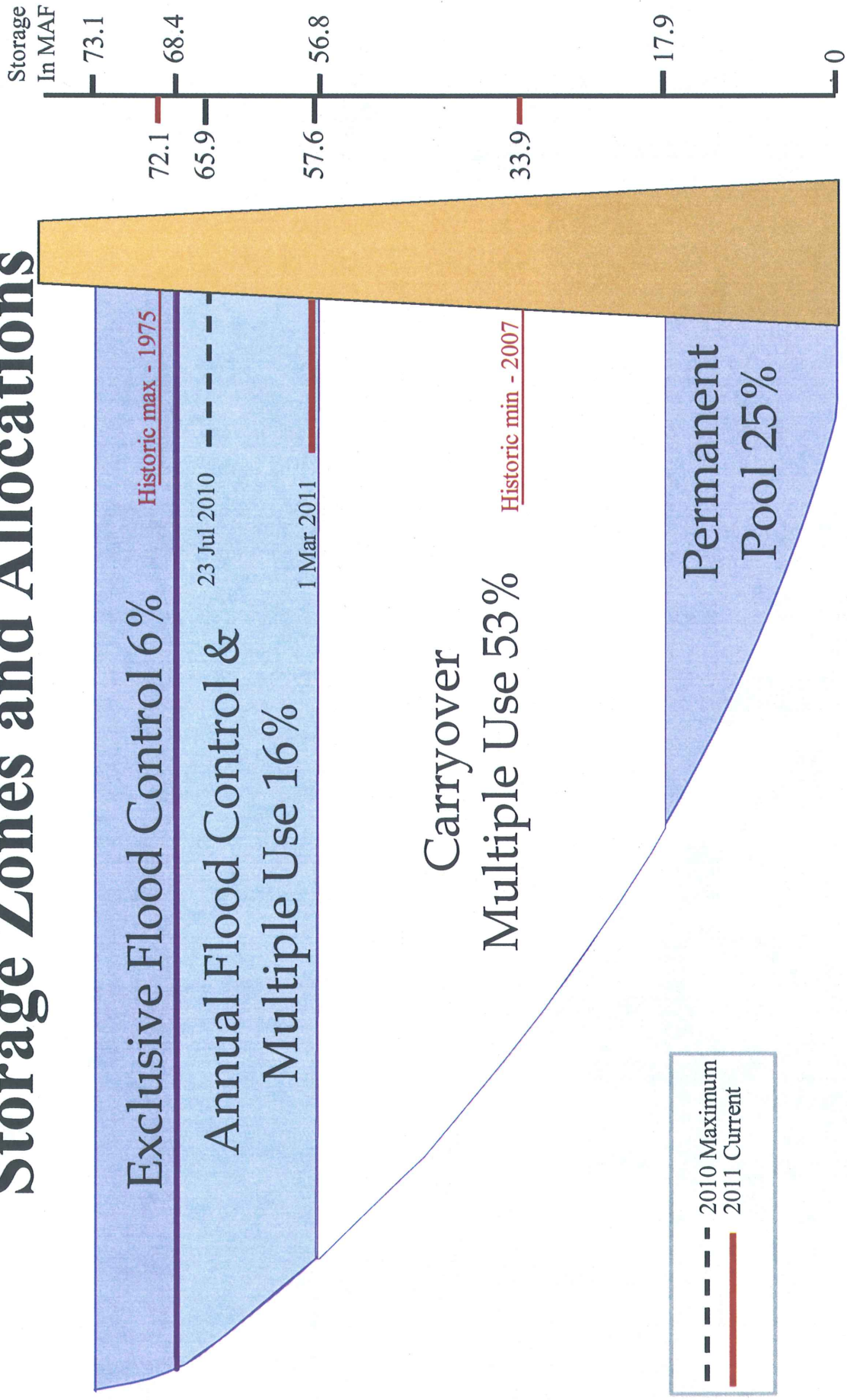
- 2011 runoff forecast = 29.8 MAF, 120% of normal
- Full navigation season / full service flows
 - ▶ 10-day extension to navigation season likely
 - ▶ Flood evacuation flows during nesting season not anticipated at this time
 - ▶ Fall releases slightly above full service
- Bi-modal spring pulse planned (March and May)
- Near normal reservoir levels and releases
- Good support to all authorized purposes



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Missouri River Mainstem System

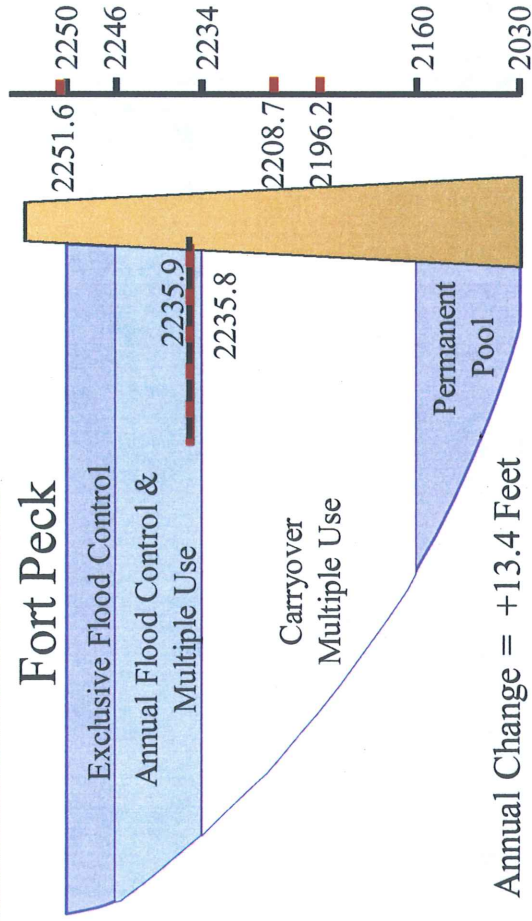
Storage Zones and Allocations



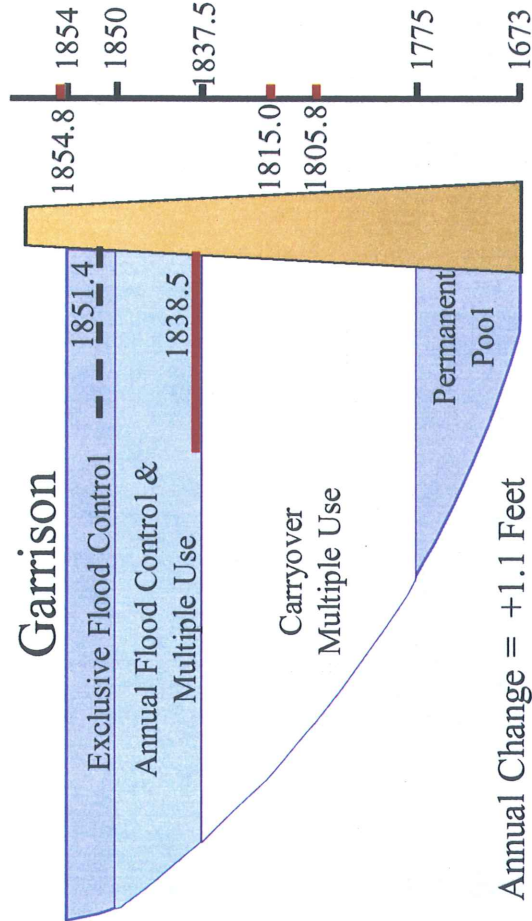
Reservoir Levels – 1 Mar 2011

- - - - - 2010 Maximum
 - - - - - 2011 Current

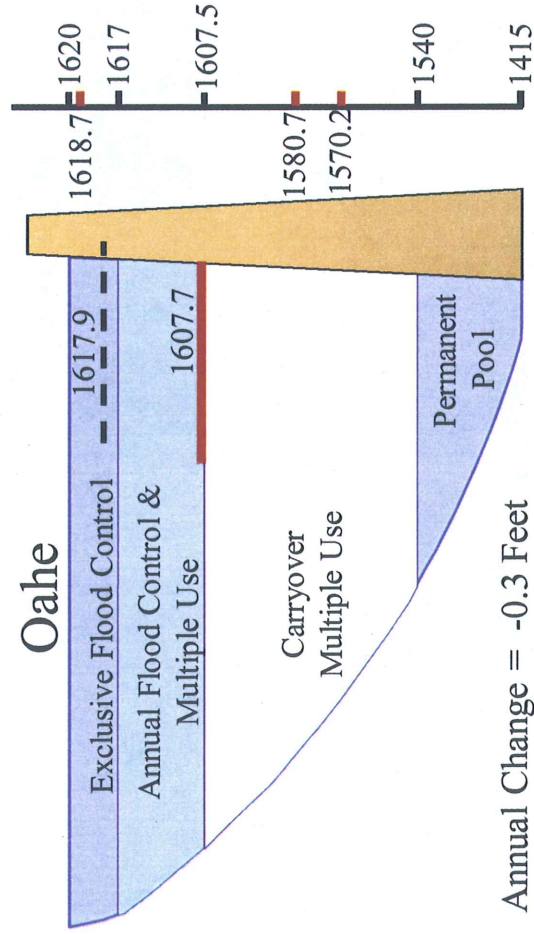
Fort Peck



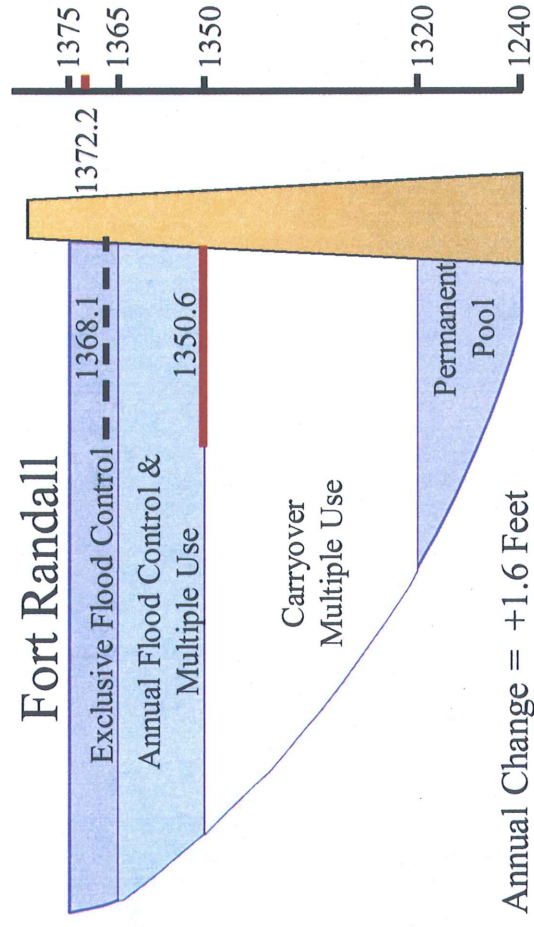
Garrison



Oahe



Fort Randall



Current Conditions

- **Garrison**
 - ▶ Closely monitoring ice condition at Bismarck
 - ▶ Releases will be reduced when snowmelt runoff begins
- **Gavins Point**
 - ▶ Current elevation = 1205.5 ft
 - Gradually increase 1206.5 ft, normal spring operating level
 - ▶ Current Release = 21,000 cfs
 - ▶ Navigation season opens 23 March (Sioux City) – 1 April (mouth)
 - Current release rate may be sufficient to meet targets
- **Lower Missouri River**
 - ▶ All locations currently below flood stage
 - ▶ Stages on the lower 100 miles of river are forecast to rise near or slightly above flood stage over the next several days due to recent rains and snowmelt



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Spring Pulses from Gavins Point Dam

- March
 - ▶ 5,000 cfs for 2 days
 - ▶ Timing at start of navigation season
 - ▶ Likely cancelled due to high flows from the James River and downstream flow limits
- May
 - ▶ Magnitude dependent on 1 May system storage and runoff forecast
 - ▶ Peak flow for 2 days
 - ▶ Timing between 1 May and 19 May
 - Water temperature ~16 degrees C
 - Nesting terns and plovers
 - Downstream river conditions



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[REDACTED] NWO

From: Anderson, G Witt NWD
Sent: Monday, March 14, 2011 7:44 PM
To: [REDACTED]; [REDACTED] HQ02; [REDACTED] Mr CIV USA ASA CW; Farhat, Jody S NWD02
Cc: [REDACTED] HQ02; McMahon, John R BG NWD; Blechinger, Erik T NWO
Subject: Missouri R. Spring Pulse (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED]

FYSA, we are coming up on decision point for operating the March pulse per BiOp. As in years past, Jody will host a call with cong delegation staff, states and others to bring them up to date.

The first call will be this Friday, 1000 Pacific. Call in info below fyi. For a couple years CEQ was active, but last year suggested we just handle these. We agree, and also we are trying to bring this to more of a routine activity. But, given new staffers, we thought it would be good to have the first call be a sort of Missouri Ops "101" and spring pulse basics focus.

You'll be on Jody's distribution list so you get additional email updates and notices of any future calls throughout the spring pulse period.

Wanted you to be aware. Any questions, feel free to contact Jody or me. Thanks,

Witt

The call-in information for the spring pulse is provided below. Jody plans on using Web Meeting to go through the presentation during the call, but will also post it on our website (<http://www.nwd-mr.usace.army.mil/rcc/>) the day before the meeting as a read-ahead. -----

----- Audio Conference -----

USA Toll-Free: [REDACTED]

ACCESS CODE: [REDACTED]

Security Code, if requested: [REDACTED]

----- Web Meeting -----

Web Meeting Address: <https://www.webmeeting.att.com>

Meeting Number(s): [REDACTED]

ACCESS CODE: [REDACTED]

* The first time you use the Web Meeting Service, you will need to download the client software. Web Meeting HELP & Software Downloads can be found at:
<https://www.webmeeting.att.com>

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: Farhat, Jody S NWD02
Sent: Monday, March 14, 2011 5:28 PM
To: Anderson, G Witt NWD
Cc: Farhat, Jody S NWD02
Subject: RE: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Witt,

The call-in information for the spring pulse is provided below. I plan on using Web Meeting to go through the presentation during the call, but will also post it on our website (<http://www.nwd-mr.usace.army.mil/rcc/>) the day before the meeting as a read-ahead. I'll add Jennifer, Lisa and Chip to my distribution list so they get additional email updates and notices of any future calls throughout the spring pulse period.

----- Audio Conference -----

USA Toll-Free: [REDACTED]
ACCESS CODE: [REDACTED]
Security Code, if requested: [REDACTED]

----- Web Meeting -----

Web Meeting Address: <https://www.webmeeting.att.com>
Meeting Number(s): [REDACTED]
ACCESS CODE: [REDACTED]

* The first time you use the Web Meeting Service, you will need to download the client software. Web Meeting HELP & Software Downloads can be found at:
<https://www.webmeeting.att.com>

Thanks for your help coordinating this meeting.

Regards,
Jody

-----Original Message-----

From: Anderson, G Witt NWD
Sent: Monday, March 14, 2011 3:50 PM
To: Farhat, Jody S NWD02
Subject: RE: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Happy to do that, and frankly, I'd like to minimize it....per your great intent to get this to more of a routine activity.

If you give me the time and number, I can send a note. I think the right folks are [REDACTED], [REDACTED] and [REDACTED]. I think we are OK in passing on CEQ, since last year they suggested they no longer needed to be engaged as I recall.

Or, I can send a heads-up msg and note that you'll provide call in info in case they want to listen.

Witt

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Monday, March 14, 2011 1:46 PM
To: Anderson, G Witt NWD
Subject: RE: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Witt - are you planning to coordinate with Lisa (Fleming?) at HQ and others at CEQ regarding the spring pulse or would you like me to? I have very little contact with those offices, so will need names if you want me to do the coordination.

My distribution list last year had the following names from HQ and CEQ: Jennifer Greer, Carrie Hill and Chip Smith.

Thanks for your help.

Jody

-----Original Message-----

From: Anderson, G Witt NWD
Sent: Monday, March 14, 2011 10:19 AM
To: Farhat, Jody S NWD02; McMahon, John R BG NWD; [REDACTED] NWD
Cc: Blechinger, Erik T NWO; [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Jody, Thursday is not good. The Friday times could work. Thanks,

Witt

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Monday, March 14, 2011 7:17 AM
To: Anderson, G Witt NWD; McMahon, John R BG NWD
Cc: Blechinger, Erik T NWO; [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Sirs - I'm looking at your calendars trying to find a time later this week when you are both able to participate in a call with Congressionals et al regarding the Gavins Point spring pulse. The times I see that might be available are: Thursday 1200-1230 PT, or Friday 0800-0830 or 1000-1030 PT.

Are you both planning to participate, and do any of these times work?

And Witt - thanks for the great input as always. I'll revise and resend today.

VR,

Jody

-----Original Message-----

From: Anderson, G Witt NWD
Sent: Friday, March 11, 2011 6:18 PM
To: Farhat, Jody S NWD02; McMahon, John R BG NWD
Cc: Blechinger, Erik T NWO
Subject: RE: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Thanks Jody. My thoughts:

- 1) Agree, it should be an NWD set up and led call. I think we just need to notify CEQ and HQ (Lisa) about it ahead of time. Also agree it would be good to offer the "101" version, especially targeting new Cong staffers.
- 2) A message point should be the fact that we have the ISAP now established with MRRIC to review the pulse component; hence, should have key points on what it is - scope/charge, who the panel is, schedule, etc.
- 3) Isn't another point to identify what we have observed in past pulses re effects on levees and interior drainage? i.e. more than "no reported damage"?
- 4) As you'll naturally do, need to synch with FWS, particularly if we are on track that obviates pulse due to downstream flow limits.

Thanks,

Witt

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Friday, March 11, 2011 11:36 AM
To: McMahon, John R BG NWD; Anderson, G Witt NWD
Cc: Farhat, Jody S NWD02
Subject: Spring Pulse Commo Plan and Coordination Calls (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Sirs,

Attached is a draft communications plan for the spring pulses from Gavins Point Dam. I look forward to your input.

As I see it, our first priority is to set up a call next week with Congressional reps, Federal and state agencies. As was done last year, I think the first call should be a "Spring Pulse 101" briefing to bring new personnel up to speed.

There is also a question of HQ's and CEQ's role: first, do we need a separate briefing for anyone at HQ or CEQ prior to the start of our coordination with others, and second, what role do they want to play in our coordination with the congressionals. I know last year CEQ was

anxious for this to be an NWD lead process, but they should still have awareness and the opportunity to participate if they so choose.

Since the spring pulse could begin as early as 21 or 22 March, I was hoping to schedule the Spring Pulse 101 call Wed - Fri next week. My only conflict during that period is from 0900 to 1230 CT on Wed.

Give me a call anytime if you'd like to discuss.

VR,
Jody

Office: 402-996-3840
Cell: 402-350-1417
Home: [REDACTED]

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

NWO

From: Wayne_NelsonStastny@fws.gov
Sent: Monday, March 14, 2011 1:10 PM
To: Farhat, Jody S NWD02
Cc: Henry_Maddux@fws.gov
Subject: RE: Missouri River Spring Pulse Background Information Conference Call (UNCLASSIFIED)
Attachments: Spring Rise Desired Outcomes Final 12 16 2009.pdf

Importance: High

Jody

Four bullets from the BiOP and expected outcomes document attached below for more reference:

1. Suitable spawning cues
2. Connectivity to low-lying lands
 - a. increased productivity
 - b. increased survival/recruitment
3. Habitat conditioning
4. Feasibility, Flow Development, and Adaptive Management

The purpose of the fourth outcome is to determine how flows can be provided that are essential for the pallid sturgeon not if the flows are necessary (p. 230, 2003 BiOP). The importance of a more normalized hydrograph cannot be understated, especially in relation to ongoing habitat construction efforts. A more normalized hydrograph plays a vital role in conjunction with constructed habitats to realize the maximum benefits of both efforts to listed species as stated in the following excerpt from

Do you have a call scheduled yet?

Wayne Nelson-Stastny
MRNRC Coordinator - USFWS
USACE Gavins Point
PO Box 710
Yankton SD 57078

(402) 667-2884
(605) 660-5349 cell

Wayne_NelsonStastny@fws.gov

"When you put your hand in a flowing stream, you touch the last that has gone before and the first of what is still to come." Leonardo Da Vinci

"Farhat, Jody S NWD02" <Jody.S.Farhat@usace.army.mil>

03/11/2011 02:55 PM To
<Wayne_NelsonStastny@fws.gov>, <Henry_Maddux@fws.gov> cc Subject
RE: Missouri River Spring Pulse Background Information Conference Call (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Wayne and Henry,

I'm gearing up to start our spring pulse coordination next week and am planning to have a "spring pulses 101" conference call with congressionals et al like I did last year.

I recalled getting this email from Mike concerning a slide I used that indicated that the purpose of the spring rise was to trigger spawning. He and I discussed this issue after the email and settled on a better language, but now that I need it, I can't recall what we decided. Can you two help? I think the bullets were along the line of trigger spawning, condition habitat, and something else. How would you summarize the purpose in a couple bullets?

Thanks for your help.

Jody

-----Original Message-----

From: Michael_Olson@fws.gov [mailto:Michael_Olson@fws.gov]

Sent: Monday, March 15, 2010 10:39 AM

To: Farhat, Jody S NWD02

Cc: Wayne_NelsonStastny@fws.gov; Henry_Maddux@fws.gov

Subject: Re: Missouri River Spring Pulse Background Information Conference Call

Hi Jody: Good luck with the briefing today.

My only comment on the slides is related to #8. The BiOp listed a number of ecological benefits related to flow normalization below the mainstem dams - it is not just related to spawning cue and when it's described as just about spawning it causes us to take many, many extra steps related to education of those who may not want to change historical paradigms.

Are you prepared to address the question that came up a year ago (I think by Kansas?) related to down-stream flow limits and risk associated with flooding during the pulse vs. flooding risk during a full service navigation season?

Mike

Mike Olson

Region 8 External Affairs

916-414-6474

701-471-1344 (c)

"Farhat, Jody S NWD02" <Jody.S.Farhat@usace.army.mil>

03/12/2010 03:34 PM To

"Adams, Steve" <stevea@wp.state.ks.us>, <bernie.hoyer@dnr.iowa.gov>,
"Bryggman, Tim" <tbryggman@mt.gov>, "Engelhardt, Bruce W."
<bengelhardt@nd.gov>, <Garland.Erbele@state.sd.us>, "Gaul, Steve"
<steve.gaul@nebraska.gov>, "Jenny Frazier" <Jenny.Frazier@ago.mo.gov>,
<Mark.Rath@state.sd.us>, <mike.hayden@outdoors.com>, <tsando@nd.gov>,
<TStreeter@kwo.state.ks.us>, <Jim.Riis@state.sd.us>, "[REDACTED] MVS
External Stakeholder" <mike.wells@dnr.mo.gov>, <john.drew@dnr.mo.gov>,
<karen.rausch@dnr.mo.gov>, <victoria.sanville@mail.house.gov>,
<ken.kopocis@mail.house.gov>, <catharine_ransom@baucus.senate.gov>,
<bridget_walsh@tester.senate.gov>, <kristin.smith@mail.house.gov>,
<justin_schardin@dorgan.senate.gov>, <tracee_sutton@conrad.senate.gov>,
<melanie.rhinehart@mail.house.gov>, <matt_thornblad@johnson.senate.gov>,
<david_schwiertert@thune.senate.gov>, <leslie.kandaras@mail.house.gov>,
<sherry_kuntz@grassley.senate.gov>, <richard_bender@harkin.senate.gov>,
<brent.boydston@mail.house.gov>, <jason_prokop@bennelson.senate.gov>,
<patrick_lehman@johans.senate.gov>, <alan.feyerherm@mail.house.gov>,
<stevens.berry@mail.house.gov>, <landon_fulmer@brownback.senate.gov>,
<ryan_flickner@roberts.senate.gov>, <eric.schmutz@mail.house.gov>,
<sarah.lochner@mail.house.gov>, <Meagan_perry@bond.senate.gov>,
<Nichole_distefano@mccaskill.senate.gov>, <Katy.Hartnett@mail.house.gov>,
<marvin.steele@mail.house.gov>, <lauren.ellis@mail.house.gov>,
<frank.miller@mail.house.gov>, <chrisbrown@mail.house.gov>,
<christina.mahoney@mail.house.gov>, <mike.matousek@mail.house.gov>,
<dana.obrien@mail.house.gov> cc "Breyman, Terrance L."
<Terrance_L._Breyman@ceq.eop.gov>, "McMahon, John R BG NWD"
<John.R.McMahon@usace.army.mil>, "Anderson, G Witt NWD"
<G.Witt.Anderson@usace.army.mil>, "[REDACTED] NWD"
<[REDACTED]@usace.army.mil>, "Wilson, Roger A COL NWK"
<Roger.A.Wilson.COL@usace.army.mil>, "Ruch, Robert J COL NWO"
<Robert.J.Ruch@usace.army.mil>, "[REDACTED] NWK"
<[REDACTED]@usace.army.mil>, "Blechinger, Erik T NWO"
<Erik.T.Blechinger@usace.army.mil>, "[REDACTED] NWK"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWK"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWK"
<[REDACTED]@usace.army.mil>, "Schenk, Kathryn M NWO"
<Kathryn.M.Schenk@usace.army.mil>, "[REDACTED] NWO"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWO"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWO"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWO"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWD"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWK"
<[REDACTED]@usace.army.mil>, <stephen_guertin@fws.gov>,
<Henry_Maddux@fws.gov>, <Charlie_Scott@fws.gov>, <Michael_Olson@fws.gov>,
<Wayne_NelsonStastny@fws.gov>, "[REDACTED] HQ02"
<[REDACTED]@usace.army.mil>, "[REDACTED] HQ02"
<[REDACTED]@usace.army.mil>, <[REDACTED]@hqda.army.mil>, "Farhat, Jody S
NWD02" <Jody.S.Farhat@usace.army.mil>, "[REDACTED] NWD02"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWD02"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWD02"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWD"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWD02"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWO"
<[REDACTED]@usace.army.mil>, "[REDACTED] NWD02"
[REDACTED]@usace.army.mil> Subject Missouri River Spring Pulse Background
Information Conference Call

All -

Spring pulses from Gavins Point dam in March and May are planned this spring to comply with the requirements of the 2003 Amended Biological Opinion on the Operation and Maintenance of the Missouri River Mainstem Reservoir System. Like last year, will be coordinating a series of conference calls to provide information on the pulses to interested Congressional members/staffers and state agencies. Personnel from Council on Environmental Quality (CEQ), the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service will participate on the calls.

The initial call is scheduled at 2:00 p.m ET (1:00 p.m. CT) on Monday, March 15, 2010. The purpose of this initial call is to provide background information on the spring pulses for members, staffers or others who are new to Missouri River issues. The spring pulse background presentation that will be used in this briefing is posted on the front page of Missouri River Basin Water Management's website at: <http://www.nwd-mr.usace.army.mil/rcc/>
< <<http://www.nwd-mr.usace.army.mil/rcc/>> <http://www.nwd-mr.usace.army.mil/rcc/>>
information is provided
below:

Call-in

START DATE/TIME: Monday, March 15, 2010 2:00 PM

STOP DATE/TIME: Monday, March 15, 2010 3:00 PM

CALL-IN NUMBER: [REDACTED]

PASSCODE: [REDACTED]

Other conference calls will be scheduled as needed at key decision points. For your information, the March pulse could start as early as March 22, however based on current hydrologic conditions, it appears unlikely that it will be implemented.

We hope you can participate.

Regards,
Jody S. Farhat, P.E.
Chief, Missouri River Basin Water Management
U.S. Army Corps of Engineers, Northwestern Division
1616 Capitol Ave.
Omaha, NE 68102

Phone 402.996.3840

Classification: UNCLASSIFIED
Caveats: NONE

<<http://www.nwd-mr.usace.army.mil/rcc/>>

Expected Outcomes of the Restoration of a Normalized Hydrograph, Missouri River, Downstream from Gavins Point Dam

**Based upon
U.S. fish and Wildlife Service 2003 Amendment to the 2000 Biological Opinion
on the
Operation of the Missouri River Main Stem Reservoir System,
Operation and Maintenance of the Missouri River Bank Stabilization
and Navigation Project,
and
Operation of the Kansas River Reservoir System**

Prepared by the USFWS December 2009

The intent of this document is to articulate the expected outcomes of a restored normalized hydrograph in the Missouri River from Gavins Point Dam downstream. Hereafter, the document will solely focus on the expected outcomes of the bi-modal spring pulse portion of a normalized hydrograph, recognizing the pre-development hydrograph of the Missouri River has been significantly altered during other portions of the year.

There are four expected outcomes from the spring pulse. Three are related to the listed species; primarily the pallid sturgeon and a fourth is process oriented to further refine and implement the bimodal spring pulse:

1. Suitable spawning cues
2. Connectivity to low-lying lands
 - a. increased productivity
 - b. increased survival/recruitment
3. Habitat conditioning
4. Feasibility, Flow Development, and Adaptive Management

The purpose of the fourth outcome is to determine how flows can be provided that are essential for the pallid sturgeon not if the flows are necessary (p. 230, 2003 BiOP). The importance of a more normalized hydrograph cannot be understated, especially in relation to ongoing habitat construction efforts. A more normalized hydrograph plays a vital role in conjunction with constructed habitats to realize the maximum benefits of both efforts to listed species as stated in the following excerpt from the 2003 BiOP:

Continued survival of pallid sturgeon depends on restoration of riverine form and functions, as well as some semblance of the pre-development or natural hydrograph. Missouri River habitat restoration is, therefore, multi-faceted and involves a combination of reservoir operational changes (e.g., hydrograph and temperature), structural modifications (e.g., chute restoration), and non-structural actions (e.g., floodplain acquisition or easements). The maximum benefits of physical habitat projects to listed species can only be realized when coupled with complementary hydrology (p. 226, 2003BiOP).

Spring pulse expected outcomes will be further explained subsequently. Excerpts from the 2003 BiOP, including Background Concerning Science – Ecology of Rivers are included as appropriate.

Spring Pulse Expected Outcomes

1. Suitable spawning cues

- Sufficient frequency for pallid sturgeon to exploit the entire reach of the Missouri River from Gavins Point Dam to the confluence with the Mississippi River (p. 235, 2003 BiOP).

The following excerpts refer to a suite of parameters including components of a normalized the hydrograph. Determining the suitable combination of parameters and components of a spring pulse will be part of developing an Adaptive Management program. It is important to note the complexity and associated role that form (habitat) and function (hydrology) play in combination to aide listed species.

Gavins Point Dam to Sioux City

Operations of Gavins Point Dam result in a lack of cues to support spawning (timing, magnitude, and rate of change) and lack of low flows for rearing of young pallid sturgeon. The Corps stated that there is insufficient data to determine the timing, magnitude, or rate of change “essential” for pallid sturgeon survival. The Service agrees with the Corps that there is not a sufficient amount of information to precisely set a flow regime or to identify which element (temperature, turbidity, rate of change, magnitude of change, etc.) of the hydrograph is the most important factor (if there is only one). The concept of Adaptive Management is intended to address this kind of scientific uncertainty (p. 164, 2003 BiOP).

Sioux City to the mouth of the Platte River

The homogeneity of flows as well as the reduced early flow peaks affect the behavior/movement of the surgeon. However, the increased inflows from the tributaries in this sub-reach begin to attenuate the altered hydrology resulting from Corps operations. Lack of cues for spawning, lower flows for rearing of pallids, and the scarcity of habitat available in this reach all substantially reduce the fish community as a whole. The lack of spawning cues throughout this reach may be inhibiting adult fish from migrating past the confluence of the Platte River through this sub-reach to the sub-reach above Sioux City (p.167 2003 BiOP).

Background Concerning Science – Ecology of Rivers

When early snow melt began in the lower elevations of the plains, as early as March continuing through April, it contributed to an early pulse of water into and down the river. This initial early pulse would also stimulate the large river fish community to

begin migrating, redistributing themselves throughout the river in preparation for spawning, reproduction, and utilization of food base (p. 22, 2003 BiOP).

The late pulses also provided significant behavioral cues to fish depending upon the magnitude of the pulse, the rate of the increase of flow that comprised the pulse, temperature, and chemical stimuli associated with either the water or the sediment load in the river (p. 23, 2003 BiOP).

2. Connectivity to low-lying lands:

- Increased productivity – input of nutrients and forage items
- Increased survival/recruitment for Young-of-the- Year (YOY) forage fish and pallid sturgeon

The following excerpts elucidate the importance of a more normalized hydrograph and flood plain connectivity to productivity, including invertebrate production. Increased survival and recruitment of pallid sturgeon and YOY forage fish are expected outcomes from increased flood plain connectivity and a more normalized hydrograph. Many of the metrics for defining success to increased productivity, survival and recruitment will be part of a developing Adaptive Management Program which addresses a more normalized hydrograph.

Gavins Point Dam to Sioux City

The altered hydrograph is likely precluding subsequent production of larvae in this reach. Because of the operational influences in this sub-reach there is a lack of larval production so there are no effects related to larval drift or transport...

Prey availability is affected in a number of ways. The altered spring hydrograph is likely decreasing the production of juvenile fish and invertebrate prey at a time when YOY pallids require elevated prey production. Higher spring and summer flows do not provide the shallow water habitat to sufficiently provide for pallid sturgeon development. Additionally, the lack of a spring pulse and the absence of floodplain connectivity preclude the rich production of prey items that would normally occur on the floodplains and be available when larval and juvenile pallid sturgeon are present. System functioning and synchronized timing of prey production with pallid sturgeon needs are both disrupted... (p. 165, 2003 BiOP)

Sioux City to the mouth of the Platte River

Prey production and availability is limited throughout this sub-reach by a number of factors. These include: the lack of habitat diversity through either lack of floodplain habitat generally; floodplain connectivity to any floodplain habitat that is present; lack of shallow water habitat; lack of structure, diversity, and complexity of habitat coupled with high velocities associated with this reach. The altered peak hydrograph and lack of habitat diversity is likely effecting the

production of juvenile fish and invertebrate prey items at a time when YOY pallids require elevated prey production. (p. 167, 2003 BiOP)

Background Concerning Science – Ecology of Rivers

This early pulse contributed to early forage base production... (p. 22, 2003 BiOP)

As the initial early snow melt receded, the mountain snow melt began, as early as April, and may have continued through the middle of July. These high, late spring/early summer, pulses inundated floodplains and fostered a significant bloom of forage fish and other prey sources. These forage fish, invertebrates, and planktonic species, in turn, provided food for the juvenile river fish that congregated in close proximity to the river's edge where the floodplains would be draining and supplying this rich source of protein to the river. In extremely high years when productivity was significant, this productivity likely carried over to subsequent years and continued to provide for the health of the natural community dependent on the river (p. 23, 2003 BiOP).

The dams have also severely eliminated slow, shallow water areas where fish can escape predators and forage. The suppression of flooding events on the floodplain has suppressed the ability of the river to produce forage and prey items and deliver those ecological benefits to young, large river fish species at a time when it is most needed, as larvae and juveniles (p. 24, 2003 BiOP).

3. Habitat Conditioning

- Scouring of spawning substrate for pallid sturgeon
- Conditions of emergent sandbar habitat for least terns and piping plovers

There is the potential for multi-species benefits from a more normalized hydrograph. Pallid sturgeon, least terns and piping plovers could potentially benefit from habitat conditioning events from a spring pulse. The following excerpts provide additional detail

Pallid sturgeon

Gavins Point Dam to Sioux City

The altered hydrograph from Gavins Point Dam may not provide for scouring flows to keep spawning substrate suitable for spawning pallid sturgeon (p. 165 2003 BiOP).

Gavins Point Spring Sandbar Habitat Condition.

A third flow test, conditioning of constructed sandbar habitat, will be conducted downstream from Gavins Point Dam. Before running this test, new sandbar habitat would be constructed following the fledging of the least terns and piping plovers. As releases from Gavins Point Dam are increased the following spring

to meet the navigation service requirements, there will be additional releases in excess of those planned to serve navigation such that new sandbar habitat would be inundated for a day or two. This is intended to consolidate the substrate and potentially mix organic material in the surface layer. The objective of this test is to determine if there is a difference in least tern and piping plover productivity between the conditioned habitat and the habitat that is constructed and not inundated (p. 202, 2003 BiOP).

Background Concerning Science – Ecology of Rivers

This early pulse contributed ... habitat building events, while also simultaneously providing nesting habitat for bird species such as the least tern and piping plover (p. 22, 2003 BiOP).

These high, late spring, pulses also provided for major habitat formation and redistribution of both shallow water habitat and sand bars that would be exposed as the water receded (p. 23, 2003 BiOP).

These hydrologic alterations and lack of sediment have suppressed the ability of the river to create the high sandbars and shallow water areas that provide essential nursery and foraging areas for birds and fish. Indeed, these hydrological alterations have likely had the reverse effect, increasing the rate that habitat for birds and rearing fish is made unsuitable for essential life cycle stages (p. 23, 2003 BiOP).

4. Feasibility, Flow Development, and Adaptive Management

The following section is an excerpt from p. 230 – 232, 2003 BiOP.

The intention of this element is to develop a flow regime that meets the needs of the species as described in element VII. (Flow Modification) The purpose of this element is to determine how flows can be provided that are essential for the survival of the pallid sturgeon not if the flows are necessary. It is the intent of this element to have information available and evaluated to implement element VII in March of 2006. Additionally it is intended that the adaptive management be a dynamic and ongoing process that results in action being implemented as data develops.

1. Feasibility and Flow Development

The following elements shall be completed within 2 years of issuance of this 2003 Amended Biological Opinion

- a) The Corps shall prepare and finalize a feasibility report which is comprised of several elements that address flow regimes, adaptive management, feasibility of various options, and impediments to implementation.
- b) The spring pulse shall be a bimodal release from Gavins Point Dam that provides for spawning cues and floodplain connectivity in the later spring and early summer. ...

- c) The Corps shall evaluate the feasibility of the various alternatives for flow study outlined in element VI.1.a above. The purposes of this part will be to identify the methods that the Corps may use to provide flows necessary for the survival of the pallid sturgeon. Determine impediments to implementing the flows necessary to ensure the survival of pallid sturgeon, and identify mitigation measures to address the impacts of removing impediments to implementation (e.g. floodplain easements, scouring easements, navigation off-sets).
- d) The Corps shall establish an independent group of scientist that have expertise in the design, development, and implementation of adaptive management processes. This group will eventually be incorporated into the MRRIP to help guide that process. The Corps, shall collaborate with the Service and the USGS, in development of an adaptive management program that will: identify the scientific uncertainties surrounding the life history and conservation needs of pallid sturgeon, identify scientific experiments that can be implemented in the construction of the flow regimes that are to be developed above, design data construction of the flow regimes that are to be developed above, design data collection and analysis methods and mechanisms to evaluate the experiments, identify the critical metrics against which decision-making can be made, the pathways to modify project operations or additional experimentation if needed, depending on results. The adaptive management program developed shall be implemented in conjunction with the first flow modification from Gavins Point Dam in 2006...
- e) The Corps shall modify operations based on the outcomes from the adaptive management program. The adaptive management program is an ongoing and dynamic process that results in change over time to improve the intended purposes of this RPA.

Justification

The Corps, in their proposed action, is committed to a review of their action in three years based on information they collected and may possibly modify their action based on adaptive management...Due to some scientific uncertainty surrounding the pallid sturgeon and its critical population status in the wild, it is crucial to be able to respond to new information. In order to ensure the highest probability of success, experimentation and data collection must be collected in a structured, well thought out, and accurate manner. There is a need to develop information that will refine the Corps capability to manage flows for the needs of the pallid sturgeon. Prescriptive flows that are not flexible or responsive to the hydrology in the basin, both in terms of when hydrologic events may occur and the magnitude of the events, will not likely provide optimum conditions for the pallid sturgeon. A process to develop more refined criteria and remove the impediments that may exist for implementing certain aspects of flow modifications are critical to ensuring survival of the pallid sturgeon while minimizing impacts to other project purposes. Subsequent evaluation must be targeted to produce a management decision. Establishing an expert independent group of scientists to assist the Corps in developing an adaptive management program will help ensure the highest probability of success for implementation. This will help ensure the survival of the pallid sturgeon in the wild...

[REDACTED] NWO

From: Anderson, G Witt NWD
Sent: Tuesday, March 15, 2011 9:18 AM
To: [REDACTED] HQ02
Cc: Farhat, Jody S NWD02
Subject: RE: Missouri R. Spring Pulse (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jen, it is pretty certain the March pulse won't happen due to high flow levels and the downstream precludes. Too early to say for May.

Another good thing which will be reported is we now have an independent science advisory panel set up in collaboration with MRRIC to look at the merits of the pulse. Report is due this fall.

Witt

-----Original Message-----

From: [REDACTED] HQ02
Sent: Tuesday, March 15, 2011 7:14 AM
To: Anderson, G Witt NWD
Subject: RE: Missouri R. Spring Pulse (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks Witt...I may listen in...do you think this year is going to be as controversial. And, kudos for getting this back in the box for the Corps to lead! Jen

[REDACTED]
Chief, Future Directions Branch/Civil Works
[REDACTED] (desk)
[REDACTED] (cell)
[REDACTED] (fax)

-----Original Message-----

From: Anderson, G Witt NWD
Sent: Monday, March 14, 2011 8:44 PM
To: [REDACTED] HQ; [REDACTED] HQ02; [REDACTED] Mr CIV USA ASA CW; Farhat, Jody S NWD02
Cc: [REDACTED] HQ02; McMahon, John R BG NWD; Blechinger, Erik T NWO
Subject: Missouri R. Spring Pulse (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] -
FYSA, we are coming up on decision point for operating the March pulse per BiOp. As in years past, Jody will host a call with cong delegation staff, states and others to bring them up to date.

The first call will be this Friday, 1000 Pacific. Call in info below fyi. For a couple years CEQ was active, but last year suggested we just handle these. We agree, and also we are trying to bring this to more of a routine activity. But, given new staffers, we thought it would be good to have the first call be a sort of Missouri Ops "101" and spring pulse basics focus.

You'll be on Jody's distribution list so you get additional email updates and notices of any future calls throughout the spring pulse period.

Wanted you to be aware. Any questions, feel free to contact Jody or me. Thanks,

Witt

The call-in information for the spring pulse is provided below. Jody plans on using Web Meeting to go through the presentation during the call, but will also post it on our website (<http://www.nwd-mr.usace.army.mil/rcc/>) the day before the meeting as a read-ahead. -----

----- Audio Conference -----

USA Toll-Free: [REDACTED]

ACCESS CODE: [REDACTED]

Security Code, if requested: [REDACTED]

----- Web Meeting -----

Web Meeting Address: <https://www.webmeeting.att.com>

Meeting Number(s): [REDACTED]

ACCESS CODE: [REDACTED]

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<https://www.webmeeting.att.com>

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: Farhat, Jody S NWD02
Sent: Wednesday, March 16, 2011 12:21 PM
To: [REDACTED] NWO; [REDACTED] NWD02; [REDACTED] NWD02
Subject: RE: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] - thanks a lot for the great report. We started reducing Garrison releases yesterday in anticipation of the start of the melt. We appreciate any information you can provide and will keep you updated on our plans. Call or email anytime.

Jody

-----Original Message-----

From: [REDACTED] NWO
Sent: Wednesday, March 16, 2011 10:15 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

FYI,
I drove the Missouri River yesterday afternoon, March 15th. The river is open, with no flowing ice, down to approximately RM 1338 (Just downstream of Price). There are areas where there is still some ice laying on the banks, which would likely float downstream if stages rise a couple of feet. Downstream from RM1338 I'd estimate that there is still approximately 98% ice cover although there are areas of the channel which are opening. I noted three such areas at Double Ditch. There is an open channel along the West bank below Heskett Station power plant down into the Bismarck/Mandan area.

In my opinion there is still a threat of ice jamming in the Bismarck area so tributary flows need to be monitored closely. The ditches around Bismarck/Mandan were full and beginning to flow yesterday. I noted this occurring north of Bismarck up to around the Wilton area.

[REDACTED]
Operations Project Manager
Garrison Project

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] NWO

From: Farhat, Jody S NWD02
Sent: Sunday, March 20, 2011 11:37 AM
To: [REDACTED] NWD02
Subject: Re: Garrison Releases (UNCLASSIFIED)

Good plan. I was happy to see the ice gone in Bismarck. Hopefully schmidt will soon do the same.

You might forward your note to Kelly Castelle in ND

Jody

From: [REDACTED] NWD02
To: Farhat, Jody S NWD02; [REDACTED] NWO
Sent: Sun Mar 20 11:06:23 2011
Subject: Garrison Releases (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Jody/[REDACTED]

I cut Garrison releases to 20,000 cfs today. The Bismarck stage has been dropping over the last day and a half and is now down under 9 feet (had been above 11 a few days ago). The Bismarck web cam is no longer showing any ice out in front of the Bismarck gage, but I'm not sure how far down it is clear. The Schmidt gage is showing a very slow increase but is still slightly lower than it was back in January.

Releases the past few days have been:

Wed - 25 kcfs

Thurs - 22.4 kcfs

Fri - 21.6 kcfs

Sat - 21.2 kcfs

Sun - schedule 20 kcfs

The Heart River gage continues to climb. The gage is likely ice affected but our rating shows a little over 3,000 cfs. The Knife River is also rising. Again, the gage is likely ice affected but our rating shows a little over 600 cfs.

Any questions or concerns give me a call or send me an email.

NWO

From: Farhat, Jody S NWD02
Sent: Monday, March 21, 2011 3:23 PM
To: aaron_popelka@moran.senate.gov; Adams, Steve; alan.feyerherm@mail.house.gov; Anderson, G Witt NWD; ansley.mick@mail.house.gov; [REDACTED] NWD; [REDACTED] NWO; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; chad.ramey@mail.house.gov; Charlie Scott; chrisbrown@mail.house.gov; christina.mahoney@mail.house.gov; Cindy_Hall@mccaskill.senate.gov; colin.brainard@mail.house.gov; [REDACTED] NWK; corey_dukes@mccaskill.senate.gov; d_schwietert@thune.senate.gov; Dan.Engemann@mail.house.gov; darwin.curls@mail.house.gov; dayle_williamson@bennelson.senate.gov; Dean.Mathisen@mail.house.gov; deb.vanmatre@mail.house.gov; [REDACTED] NWD02; don_canton@hoeven.senate.gov; [REDACTED] NWO; edwin.elfmann@mail.house.gov; Engelhardt, Bruce W.; eric.bierwagen@mail.house.gov; eric.bohl@mail.house.gov; erick_lutt@bennelson.senate.gov; Farhat, Jody S NWD02; Farmer, Monique L NWO; [REDACTED] NWK; [REDACTED] HQ; Garland.Erbele@state.sd.us; gary.marble@mail.house.gov; Gaul, Steve; [REDACTED] NWK; [REDACTED] HQ02; [REDACTED]; [REDACTED]; harold_stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK; [REDACTED] NWK; janna.worsham@mail.house.gov; Jenny Frazier; Jim.Mitas@mail.house.gov; Jim.Riis@state.sd.us; John Drew; Karen Rouse; ken.kopocis@mail.house.gov; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWK; [REDACTED] NWO; [REDACTED]; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; [REDACTED] NWO; McMahon, John R BG NWD; melissa.roe@mail.house.gov; mike.hayden@outdoors.com; mike.matousek@mail.house.gov; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; patrick.carroll@mail.house.gov; patrick_lehman@johanns.senate.gov; [REDACTED] NWO; [REDACTED] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [REDACTED] NWD; randy.vogel@mail.house.gov; [REDACTED] NWO; richard.henkle@mail.house.gov; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO; scott.corrie@mail.house.gov; [REDACTED] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [REDACTED] NWK; [REDACTED] HQDA; [REDACTED] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; Streckfuss, Ted H NWO; Swenson, Michael; [REDACTED] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; wayne.brincks@mail.house.gov; Wayne_NelsonStastny@fws.gov; Wells, Mike; Westrup, Nathan; zach_nelson@bennelson.senate.gov
Subject: Gavins Point March Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All - the March spring pulse from Gavins Point dam is currently on hold due to high flows on the James River in eastern South Dakota, and flows on the Missouri River in excess of the downstream flow limits at Omaha and Nebraska City.

The status of the March pulse is not expected to change over the next several days. Another update will be provided later this week.

Each day a PowerPoint presentation documenting our decision making process will be posted on our website at: <http://www.nwd-mr.usace.army.mil/rcc/>

Call or email if you have questions.

Regards,

Jody

Jody Farhat, P.E.

Chief, Missouri River Basin Water Management

jody.s.farhat@usace.army.mil

Office: 402-996-3840

Classification: UNCLASSIFIED

Caveats: NONE

Corps cancels March pulse; James and Missouri Rivers too high

The pulse of water into the Missouri River scheduled this month to benefit the endangered pallid sturgeon has been cancelled. A natural pulse from the eastern South Dakota tributaries is occurring instead.

The melt of the extensive plains snowpack in eastern South Dakota has raised river levels well above the flow limits eliminating the two-day pulse.

Tributary streams in eastern South Dakota are well above flood stage and are forecast to continue climbing. The magnitude of the March pulse was to be 5,000 cubic feet per second (cfs) minus the flow on the James River just above its confluence with the Missouri River upstream of Sioux City. Today's flow on the James River is more than xx,xxx cfs and is expected to continue to rise through the week.

The Missouri River is above flood stage from the xxxx to xxxx and flows are not forecast to fall below the downstream flow limits for several weeks.

"The flow limits are safeguards to reduce or eliminate the pulse to ensure that it does not cause downstream flooding of agricultural land along the river," said Jody Farhat, Chief of the Water Management office here. "The stream gauge information we are receiving coupled with forecasts from the National Weather Service indicate that our most prudent action is to eliminate the pulse in March."

A pulse is also scheduled to be conducted in May. River conditions will be evaluated after May 1 to make a determination on the feasibility and timing of the pulse.

NWO

From: Farhat, Jody S NWD02
Sent: Thursday, March 24, 2011 10:11 AM
To: McCoy, Diana NWK
Subject: RE: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Diana,

Below are answers to the questions.

Answer to #3. Reservoirs on the Missouri River are currently experiencing very high inflows due to the melt of the plains snowpack in North Dakota, South Dakota and Montana. Current projections show releases from the Missouri River mainstem reservoir system this spring and summer to be normal to slightly above normal due to above normal runoff.

Answer to #4. Water levels on the Missouri River near Doniphan County are impacted by both the releases from the Corps Missouri River reservoirs and by amount of precipitation that falls downstream of the reservoirs. Rain that falls downstream of the reservoir system enters the Missouri River via numerous tributary rivers and streams.

There are 6 Corps of Engineers dams on the mainstem of the Missouri River: Fort Peck in eastern Montana; Garrison in central North Dakota; Oahe, Big Bend and Fort Randall in South Dakota; and Gavins Point along the South Dakota/Nebraska border. There are also many smaller Corps dams on tributaries throughout the basin which provide significant local flood damage reduction.

Releases from Gavins Point take approximately 4.5 days to reach the Doniphan County area.

Let me know if you need anything else.

Regards,
Jody

Jody Farhat, P.E.
Chief, Missouri River Basin Water Management jody.s.farhat@usace.army.mil
Office: 402-996-3840

-----Original Message-----

From: McCoy, Diana NWK
Sent: Thursday, March 24, 2011 9:26 AM
To: Farhat, Jody S NWD02
Subject: FW: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

We received a query today from Paul Stewart with the Kansas Chief, a weekly newspaper serving Doniphan County. Can you assist in answering two of his questions?

3. Are the dams upriver holding back a large volume of water due to the winter snows? What is your projected release schedule for this spring and summer? Will it be a normal release, or more or less?

4. What affects the water levels in this area? How many dams are upstream? And once the water is released, what is the approximate time lapse before it is expected to reach this area?

Thanks for your help!

Diana McCoy
Public Affairs Specialist
U.S. Army Corps of Engineers
Kansas City District
(816) 389-3485: Office
(816) 812-5708: Cell

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"Like" us on Facebook! www.facebook.com/usace.kcd

-----Original Message-----

From: Kneuvean, Eugene J NWK
Sent: Thursday, March 24, 2011 9:22 AM
To: McCoy, Diana NWK
Subject: RE: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Diana - I provided an answer for question 2, but I think John and Jody should have a shot at questions 1, 3-4. Let me know if you don't get a response and I can pursue -- thanks

1. What is the status of the Elwood-Gladden levee? After the '93 flood it was mandated that improvements be made. Has anything been done? If so, what to date? Is there a deadline for completion? Anything you can provide on this levee situation would be very helpful.

John Grothaus can provide an answer on this one.

2. There have been recent reports of possible spring flooding in the Midwest. Does this involve a possible flooding situation along the Missouri River, and in particular, in the Doniphan County/St. Joseph, Missouri, area?

Flooding in the spring is always possible; however, National Weather Service forecasts at this point indicate that we are looking at just a normal chance for major/moderate flooding in and along the lower Missouri River (Rulo, NE to the mouth) through early June. Snowmelt will not be an influence in the lower Missouri River basin. The chance for flooding will be specifically tied to the amount of precipitation received. The current National Weather Service 90-day outlook can be found at http://www.crh.noaa.gov/mbrfc/?n=new_outlook

3. Are the dams upriver holding back a large volume of water due to the winter snows? What is your projected release schedule for this spring and summer? Will it be a normal release, or more or less?

4. What affects the water levels in this area? How many dams are upstream? And once the water is released, what is the approximate time lapse before it is expected to reach this area?

Jody Farhat is the best person to address for both the last 2 questions.

-----Original Message-----

From: McCoy, Diana NWK

Sent: Thursday, March 24, 2011 8:34 AM

To: Kneuvean, Eugene J NWK

Subject: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Jud,

We received a query today from Paul Stewart with the Kansas Chief weekly newspaper serving Doniphan County. Can you assist in answering these questions?

1. What is the status of the Elwood-Gladden levee? After the '93 flood it was mandated that improvements be made. Has anything been done? If so, what to date? Is there a deadline for completion? Anything you can provide on this levee situation would be very helpful.

2. There have been recent reports of possible spring flooding in the Midwest. Does this involve a possible flooding situation along the Missouri River, and in particular, in the Doniphan County/St. Joseph, Missouri, area?

3. Are the dams upriver holding back a large volume of water due to the winter snows? What is your projected release schedule for this spring and summer? Will it be a normal release, or more or less?

4. What affects the water levels in this area? How many dams are upstream? And once the water is released, what is the approximate time lapse before it is expected to reach this area?

Diana McCoy

Public Affairs Specialist

U.S. Army Corps of Engineers

Kansas City District

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(816) 812-5708: Cell

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"Like" us on Facebook! www.facebook.com/usace.kcd

Classification: UNCLASSIFIED

[REDACTED] NWO

From: Farhat, Jody S NWD02
Sent: Friday, April 01, 2011 9:44 AM
To: [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: RE: 2011 April Runoff Forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I'd like to have the estimate of Service level before we discuss the forecast. While I don't oppose what you've come up with as your runoff forecast, I do believe it's on the strong side considering what is actually out there in terms of plains snowpack (very little except north of the river in ND and the Milk basin) and the mountain snowpack is only slightly above normal and nothing to write home about.

Jody

-----Original Message-----

From: [REDACTED] NWD02
Sent: Friday, April 01, 2011 9:08 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: 2011 April Runoff Forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Attached is the preliminary runoff forecast that Kevin and I have developed under careful consideration of the mountain snowpack, existing plains snow, basin hydrologic conditions and the expected climate outlook.

BLUF: The forecast rose from 29.7 MAF to 34.6 MAF, which is now an upper decile runoff forecast.

Runoff volumes for March were quite high as a result of elevated runoff overall, but especially in the Garrison, Oahe, and in the Sioux City reaches. March 2011 runoff above Sioux City, IA, was 231% of normal at 6653 KAF, and above Gavins Point Dam runoff was 213% of normal at 5501 KAF. Fort Peck received 1049 KAF (176%), Garrison received 1567 KAF (156%), Oahe received 1806 KAF (319%), Fort Randall received 686 KAF (328%), Gavins Point received 392 KAF (190%), and the Sioux City reach received 1152 KAF (385%).

The overall calendar year 2011 runoff forecast is 29.5 MAF (130% of normal) above Gavins Point Dam, which is an increase of 3.95 MAF from the March 2011 forecast. This increase is due in part to actual March runoff being higher than forecasted March runoff, an increase in forecasted runoff into the Garrison reach, and an increase in the expected mountain snowmelt runoff due to increased mountain SWE. The summation above Sioux City is 34.6 MAF (139% of normal), an increase of 4.6 MAF.

Remaining plains snow pack (2.5-4.5 inches of SWE) in the Fort Peck to Garrison reach north of the Missouri River has not melted, and as a result Garrison is expected to receive up to 2.0 MAF of runoff in the month of April, which represents about 1.0 inch of snowmelt runoff from the contributing area covered with snow (35,000 square miles). The total March-April

runoff forecast into Garrison is 3.5 MAF. Similar runoff volumes occurred in March and April of calendar years 1949 (2.9 MAF), 1960 (2.8 MAF), 1969 (3.4 MAF), and 1979 (4.5 MAF), which were all impacted by moderate to heavy plains snow in the Garrison reach.

Mountain snow accumulations as a percent of long-term averages are 116% of normal above Fort Peck and 112% of normal in the Fort Peck to Garrison reach. As a result, the May-July runoff above Fort Peck is expected to be 122% of normal, while the Fort Peck to Garrison reach is expected to receive 110% of normal runoff using snow to runoff regression equations. Runoff in all reaches above the System are forecasted to return to normal by August 2011, while above average runoff is forecasted in the Gavins to Sioux City reach due to persistently high streamflow conditions.

Kevin, Mike and I are also examining the Service Level calculation and will revise it when we have agreed upon a final forecast.

Please let us know when you are ready to discuss the forecast.

Thanks.

[REDACTED]
[REDACTED]
USACE, Northwestern Division
Missouri Basin Water Management Division
[REDACTED]

[REDACTED]@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Wednesday, March 16, 2011 10:19 AM
To: Farhat, Jody S NWD02
Subject: RE: Missouri River Spring Pulse Background Information Conference Call (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Not sure if you saw my previous message regarding the spring pulse background slides. I've updated the presentation for the most part and saved a new copy to
V:\Public\ReservoirRegulation\SpringPulse\2011\2011SpringPulseBackground.pptx.

You may want to re-word a few slides depending on how you want to discuss the pulses, particularly the March pulse (which will likely be cancelled).

[REDACTED]
-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Tuesday, March 15, 2011 11:00 PM
To: aaron_popelka@moran.senate.gov; Adams, Steve; alan.feyerherm@mail.house.gov; Anderson, G Witt NWD; ansley.mick@mail.house.gov; [REDACTED] NWD; Bernie Hoyer ; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; chad.ramey@mail.house.gov; Charlie Scott; chrisbrown@mail.house.gov; christina.mahoney@mail.house.gov; Cindy_Hall@mccaskill.senate.gov; colin.brainard@mail.house.gov; [REDACTED] NWK; corey_dukes@mccaskill.senate.gov; d_schwiertert@thune.senate.gov; Dan.Engemann@mail.house.gov; darwin.curls@mail.house.gov; dayle_williamson@bennelson.senate.gov; deb.vanmatre@mail.house.gov; don_canton@hoeven.senate.gov; [REDACTED] NWO; edwin.elfmann@mail.house.gov; Engelhardt, Bruce W.; eric.bierwagon@mail.house.gov; eric.bohl@mail.house.gov; erick_lutt@bennelson.senate.gov; Farhat, Jody S NWD02; Farmer, Monique L NWO; [REDACTED] A NWK; [REDACTED] HQ; Garland.Erbele@state.sd.us; gary.marble@mail.house.gov; Gaul, Steve; [REDACTED] NWK; [REDACTED] HQ02; greg.long@mail.house.gov; [REDACTED] ; Hargrave, Rosemary C ; harold_stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK ; [REDACTED] NWK ; janna.worsham@mail.house.gov; Jenny Frazier; Jim.Mitas@mail.house.gov; Jim.Riis@state.sd.us; John Drew; Karen Rausch; ken.kopocis@mail.house.gov; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWK ; [REDACTED] NWO; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; Mcallister, [REDACTED] NWO; McMahon, John R BG NWD ; melissa.roe@mail.house.gov; mike.hayden@outdoors.com; mike.matousek@mail.house.gov; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; patrick.carroll@mail.house.gov; patrick_lehman@johanns.senate.gov; [REDACTED] NWO ; [REDACTED] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [REDACTED] NWD; [REDACTED] NWO; richard.henkle@mail.house.gov; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO ; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO ; scott.corrie@mail.house.gov; [REDACTED] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [REDACTED] NWK; [REDACTED] HQDA; [REDACTED] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; victoria.sanville@mail.house.gov; wayne.brincks@mail.house.gov; Wayne_NelsonStastny@fws.gov; Wells, Mike ; Westrup, Nathan; zach_nelson@bennelson.senate.gov
Cc: Farhat, Jody S NWD02

Subject: Missouri River Spring Pulse Background Information Conference Call (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

All -

Spring pulses from Gavins Point dam in March and May are planned this spring to comply with the requirements of the 2003 Amended Biological Opinion on the Operation and Maintenance of the Missouri River Mainstem Reservoir System. As in previous years, the Corps of Engineers will be coordinating a series of conference calls to provide information on the pulses to interested Congressional members/staffers and state agencies. Personnel from the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service will participate on the calls.

The initial conference call and associated web meeting is scheduled at 1200 CT (1300 ET, 1100 MT, 1000 PT) on Friday, March 18, 2011.

The purpose of this initial conference call is to provide background information on the Gavins Point spring pulses for members, staffers or others who are new to Missouri River issues. On Thursday afternoon, March 17 the spring pulse background presentation which will be presented in the web meeting will be provided as a read-ahead. You can find it on the front page of Missouri River Basin Water Management's website at <http://www.nwd-mr.usace.army.mil/rcc/> Future spring pulse updates and related press releases will be posted at the same location.

Call-in information is provided below:

----- Audio Conference -----
USA Toll-Free: ()
ACCESS CODE: ()
Security Code, if requested: ()
----- Web Meeting -----
Web Meeting Address: <https://www.webmeeting.att.com>
Meeting Number(s): ()
ACCESS CODE: ()

* The first time you use the Web Meeting Service, you will need to download the client software. Web Meeting HELP & Software Downloads can be found at:
<https://www.webmeeting.att.com>

Other conference calls will be scheduled as needed at key decision points throughout the spring. For your information, the March pulse could start as early as March 22, however based on current hydrologic conditions, it appears unlikely that it will be implemented.

We hope you can participate. Feel free to contact me if you have questions.

Regards,
Jody Farhat, P.E.
Chief, Missouri River Basin Water Management U.S. Army Corps of Engineers, Northwestern Division

jody.s.farhat@usace.army.mil
Office: 402-996-3840

[REDACTED] NWO

From: [REDACTED] NWO
Sent: Wednesday, March 16, 2011 10:15 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

FYI,
I drove the Missouri River yesterday afternoon, March 15th. The river is open, with no flowing ice, down to approximately RM 1338 (Just downstream of Price). There are areas where there is still some ice laying on the banks, which would likely float downstream if stages rise a couple of feet. Downstream from RM1338 I'd estimate that there is still approximately 98% ice cover although there are areas of the channel which are opening. I noted three such areas at Double Ditch. There is an open channel along the West bank below Heskett Station power plant down into the Bismarck/Mandan area.

In my opinion there is still a threat of ice jamming in the Bismarck area so tributary flows need to be monitored closely. The ditches around Bismarck/Mandan were full and beginning to flow yesterday. I noted this occurring north of Bismarck up to around the Wilton area.

[REDACTED]
Operations Project Manager
Garrison Project

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] NWO

From: [REDACTED] NWO
Sent: Thursday, March 17, 2011 4:03 PM
To: [REDACTED] NWD02; Farhat, Jody S NWD02; [REDACTED] NWD02
Subject: Re: Missouri River Update (UNCLASSIFIED)

The Cannonball is running at the head waters near New England. Recommend watching the gage @ Regent. I'd expect the Heart to follow conditions on the Cannonball with a day or two delay.

Message sent via my BlackBerry Wireless Device

----- Original Message -----

From: [REDACTED] NWO
To: [REDACTED] NWD02; Farhat, Jody S NWD02; [REDACTED] NWD02
Sent: Thu Mar 17 11:24:22 2011
Subject: Re: Missouri River Update (UNCLASSIFIED)

Thanks! I am out of town the next few days but am monitoring conditions. Flood warnings are posted on the Little Missouri @ Medora. I did not see any flows on the Knife yet @ Hazen or Beulah yet. I will be at the Cannonball soon. Things are beginning to melt but am not seeing much flows in ditches or trib's yet...

Message sent via my BlackBerry Wireless Device

----- Original Message -----

From: [REDACTED] NWD02
To: Farhat, Jody S NWD02; [REDACTED] NWO; [REDACTED] NWD02
Sent: Thu Mar 17 10:04:05 2011
Subject: RE: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED]
We reduced releases to 23,000 cfs today (Thursday). We are starting to see some runoff on the Heart and Cannonball. We will likely schedule 22,000 cfs Friday and then continue to monitor the tributaries.

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Wednesday, March 16, 2011 12:21 PM
To: [REDACTED] NWO; [REDACTED] NWD02; [REDACTED] NWD02
Subject: RE: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] - thanks a lot for the great report. We started reducing Garrison releases yesterday in anticipation of the start of the melt. We appreciate any information you can provide and will keep you updated on our plans. Call or email anytime.

Jody

-----Original Message-----

From: [REDACTED] NWO
Sent: Wednesday, March 16, 2011 10:15 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: FOUO

FYI,

I drove the Missouri River yesterday afternoon, March 15th. The river is open, with no flowing ice, down to approximately RM 1338 (Just downstream of Price). There are areas where there is still some ice laying on the banks, which would likely float downstream if stages rise a couple of feet. Downstream from RM1338 I'd estimate that there is still approximately 98% ice cover although there are areas of the channel which are opening. I noted three such areas at Double Ditch. There is an open channel along the West bank below Heskett Station power plant down into the Bismarck/Mandan area.

In my opinion there is still a threat of ice jamming in the Bismarck area so tributary flows need to be monitored closely. The ditches around Bismarck/Mandan were full and beginning to flow yesterday. I noted this occurring north of Bismarck up to around the Wilton area.

[REDACTED]
Operations Project Manager
Garrison Project

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: FOUO

NWO

From: Vogel, Randy [Randy.Vogel@mail.house.gov]
Sent: Thursday, March 17, 2011 1:55 PM
To: Farhat, Jody S NWD02
Subject: RE: Missouri River Spring Pulse Background Information Conference Call (UNCLASSIFIED)

His email is eric.bierwagen@mail.house.gov. You spelled his last name wrong. I have already been getting updates, and eric should be included also.

-----Original Message-----

From: Farhat, Jody S NWD02 [mailto:Jody.S.Farhat@usace.army.mil]
Sent: Thursday, March 17, 2011 12:51 PM
To: Vogel, Randy
Subject: FW: Missouri River Spring Pulse Background Information Conference Call (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

My message below, which was sent to Eric Bierwagon, bounced, so I am forwarding it to you instead. Let me know if you are not the person who should be contacted regarding Missouri River issues for Rep Rehberg.

Regards,

Jody Farhat, P.E.

Chief, Missouri River Basin Water Management Corps of Engineers, Northwestern Division

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Tuesday, March 15, 2011 11:00 PM
To: aaron_popelka@moran.senate.gov; Adams, Steve; alan.feyerherm@mail.house.gov; Anderson, G Witt NWD; ansley.mick@mail.house.gov; [REDACTED] NWD; Bernie Hoyer ; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; chad.ramey@mail.house.gov; Charlie Scott; chrisbrown@mail.house.gov; christina.mahoney@mail.house.gov; Cindy_Hall@mccaskill.senate.gov; colin.brainard@mail.house.gov; [REDACTED] NWK; corey_dukes@mccaskill.senate.gov; d_schwietert@thune.senate.gov; Dan.Engemann@mail.house.gov; darwin.curls@mail.house.gov; dayle_williamson@bennelson.senate.gov; deb.vanmatre@mail.house.gov; don_canton@hoeven.senate.gov; [REDACTED] NWO; edwin.elfmann@mail.house.gov; Engelhardt, Bruce W.; eric.bierwagon@mail.house.gov; eric.bohl@mail.house.gov; erick_lutt@bennelson.senate.gov; Farhat, Jody S NWD02; Farmer, Monique L NWO; [REDACTED] NWK; [REDACTED] HQ; Garland.Erbele@state.sd.us; gary.marble@mail.house.gov; Gaul, Steve; [REDACTED] NWK; [REDACTED] HQ02; greg.long@mail.house.gov; [REDACTED] ; [REDACTED] ; harold_stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK ; [REDACTED] NWK ; janna.worsham@mail.house.gov; Jenny Frazier; Jim.Mitas@mail.house.gov; Jim.Riis@state.sd.us; John Drew; Karen Rausch; ken.kopocis@mail.house.gov; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWK ; [REDACTED] NWO; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; [REDACTED] Jr NWO; McMahon, John R BG NWD ; melissa.roe@mail.house.gov; mike.hayden@outdoors.com; mike.matousek@mail.house.gov; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; patrick.carroll@mail.house.gov; patrick_lehman@johanns.senate.gov; [REDACTED] NWO ; [REDACTED] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [REDACTED] NWD; [REDACTED]

[REDACTED] NWO; richard.henkle@mail.house.gov; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO ; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO ; scott.corrie@mail.house.gov; [REDACTED] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [REDACTED] NWK; [REDACTED] HQDA; [REDACTED] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [REDACTED] NWO; [REDACTED] ; [REDACTED] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; victoria.sanville@mail.house.gov; wayne.brincks@mail.house.gov; Wayne_NelsonStastny@fws.gov; Wells, Mike ; Westrup, Nathan; zach_nelson@bennelson.senate.gov
Cc: Farhat, Jody S NWD02
Subject: Missouri River Spring Pulse Background Information Conference Call
(UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All -

Spring pulses from Gavins Point dam in March and May are planned this spring to comply with the requirements of the 2003 Amended Biological Opinion on the Operation and Maintenance of the Missouri River Mainstem Reservoir System. As in previous years, the Corps of Engineers will be coordinating a series of conference calls to provide information on the pulses to interested Congressional members/staffers and state agencies. Personnel from the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service will participate on the calls.

The initial conference call and associated web meeting is scheduled at 1200 CT (1300 ET, 1100 MT, 1000 PT) on Friday, March 18, 2011.

The purpose of this initial conference call is to provide background information on the Gavins Point spring pulses for members, staffers or others who are new to Missouri River issues. On Thursday afternoon, March 17 the spring pulse background presentation which will be presented in the web meeting will be provided as a read-ahead. You can find it on the front page of Missouri River Basin Water Management's website at <http://www.nwd-mr.usace.army.mil/rcc/> Future spring pulse updates and related press releases will be posted at the same location.

Call-in information is provided below:

----- Audio Conference -----
USA Toll-Free: (800) [REDACTED]
ACCESS CODE: [REDACTED]
Security Code, if requested: [REDACTED]
----- Web Meeting -----
Web Meeting Address: <https://www.webmeeting.att.com>
Meeting Number(s): ([REDACTED])
ACCESS CODE: [REDACTED]

* The first time you use the Web Meeting Service, you will need to download the client software. Web Meeting HELP & Software Downloads can be found at: <https://www.webmeeting.att.com>

Other conference calls will be scheduled as needed at key decision points throughout the spring. For your information, the March pulse could start as early as March 22, however based on current hydrologic conditions, it appears unlikely that it will be implemented.

We hope you can participate. Feel free to contact me if you have questions.

Regards,
Jody Farhat, P.E.
Chief, Missouri River Basin Water Management U.S. Army Corps of Engineers, Northwestern
Division

jody.s.farhat@usace.army.mil
Office: 402-996-3840

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Thursday, March 17, 2011 10:04 AM
To: Farhat, Jody S NWD02; [REDACTED] NWO; [REDACTED] NWD02
Subject: RE: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED]
We reduced releases to 23,000 cfs today (Thursday). We are starting to see some runoff on the Heart and Cannonball. We will likely schedule 22,000 cfs Friday and then continue to monitor the tributaries.

Mike

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Wednesday, March 16, 2011 12:21 PM
To: [REDACTED] NWO; [REDACTED] NWD02; [REDACTED] NWD02
Subject: RE: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] - thanks a lot for the great report. We started reducing Garrison releases yesterday in anticipation of the start of the melt. We appreciate any information you can provide and will keep you updated on our plans. Call or email anytime.

Jody

-----Original Message-----

From: [REDACTED] NWO
Sent: Wednesday, March 16, 2011 10:15 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02; [REDACTED] NWD02
Subject: Missouri River Update (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

FYI,
I drove the Missouri River yesterday afternoon, March 15th. The river is open, with no flowing ice, down to approximately RM 1338 (Just downstream of Price). There are areas where there is still some ice laying on the banks, which would likely float downstream if stages rise a couple of feet. Downstream from RM1338 I'd estimate that there is still approximately 98% ice cover although there are areas of the channel which are opening. I noted three such areas at Double Ditch. There is an open channel along the West bank below Heskett Station power plant down into the Bismarck/Mandan area.

In my opinion there is still a threat of ice jamming in the Bismarck area so tributary flows need to be monitored closely. The ditches around Bismarck/Mandan were full and beginning to flow yesterday. I noted this occurring north of Bismarck up to around the Wilton area.

[REDACTED]
Operations Project Manager
Garrison Project

NWO

From: [REDACTED] NWD02
Sent: Sunday, March 20, 2011 11:06 AM
To: Farhat, Jody S NWD02; [REDACTED] NWO
Subject: Garrison Releases (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody/Todd,

I cut Garrison releases to 20,000 cfs today. The Bismarck stage has been dropping over the last day and a half and is now down under 9 feet (had been above 11 a few days ago). The Bismarck web cam is no longer showing any ice out in front of the Bismarck gage, but I'm not sure how far down it is clear. The Schmidt gage is showing a very slow increase but is still slightly lower than it was back in January.

Releases the past few days have been:

Wed - 25 kcfs
Thurs - 22.4 kcfs
Fri - 21.6 kcfs
Sat - 21.2 kcfs
Sun - schedule 20 kcfs

The Heart River gage continues to climb. The gage is likely ice affected but our rating shows a little over 3,000 cfs. The Knife River is also rising. Again, the gage is likely ice affected but our rating shows a little over 600 cfs.

Any questions or concerns give me a call or send me an email.

[REDACTED]
Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWO
Sent: Monday, March 21, 2011 3:36 PM
To: [REDACTED] NWD02; Farhat, Jody S NWD02
Subject: RE: Garrison releases (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks, that is good news, the Knife river have not really started to flow and/or move ice yet. Having the Missouri open will certainly help. I'm not sure what's happening on Apple Creek but I'd venture to guess that it is still ice covered as well. The SW part of the State has seen a significant melt and lost most of its snow cover. As you head East and North from Bowman things are still frozen up. Lots of snow yet to melt north of Interstate 94 and we may add significant snow to what remains on the ground over the next couple of days...

[REDACTED]
-----Original Message-----

From: [REDACTED] NWD02
Sent: Monday, March 21, 2011 1:56 PM
To: Farhat, Jody S NWD02; [REDACTED] NWO
Subject: FW: Garrison releases (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

See note from Kelly Casteel below. The Bismarck regulatory office is checking for us also. I haven't heard anything back from them yet.
Mike

-----Original Message-----

From: Casteel, Kelly D. [mailto:kcasteel@nd.gov]
Sent: Monday, March 21, 2011 1:45 PM
To: [REDACTED] NWD02
Subject: Re: Garrison releases (UNCLASSIFIED)

Mike,

Our Surveyors were out looking at ice conditions this morning. They reported back that they could find no ice on the Missouri. They drove up to Double Ditch, and Down to Fort Lincoln. The Heart River is still iced in. The ice thickness is approximately 15"-18".

Kelly

On 3/21/11 9:57 AM, "[REDACTED] NWD02"
<[REDACTED]@usace.army.mil> wrote:

>Classification: UNCLASSIFIED
>Caveats: NONE

>

>Thanks for the info. We may have someone from the Bismarck regulatory
>office see how far downstream it is open.

[REDACTED]

>

>-----Original Message-----

>From: Casteel, Kelly D. [mailto:kcasteel@nd.gov]

>Sent: Monday, March 21, 2011 9:51 AM

>To: [REDACTED] NWD02

>Subject: Re: Garrison releases (UNCLASSIFIED)

>

>Thanks Mike. I Drove by Memorial Bridge this morning and the ice was
>off the river. I don't know how far upstream or downstream open water
>is though.

>

>On 3/20/11 11:09 AM, "[REDACTED] NWD02"

><[REDACTED]@usace.army.mil> wrote:

>

>>Classification: UNCLASSIFIED

>>Caveats: NONE

>>

>>Kelly,

>>Garrison update:

>>We reduced Garrison releases to 20,000 cfs today. The Bismarck stage
>>has been dropping over the last day and a half and is now down under 9
>>feet (had been above 11 a few days ago). Our web cam at the Bismarck
>>gage is no longer showing any ice out in front, but I'm not sure how
>>far down is it clear.

>>

>>Releases the past few days have been:

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>>Thurs - 22.4 kcfs

>>Fri - 21.6 kcfs

>>Sat - 21.2 kcfs

>>Sun - schedule 20 kcfs

>>

>[REDACTED]

>>

>>-----Original Message-----

>>From: Casteel, Kelly D. [mailto:kcasteel@nd.gov]

>>Sent: Friday, March 18, 2011 8:24 AM

>>To: [REDACTED] NWD02

>>Subject: Re: Garrison releases

>>

>>Thanks Mike for keeping me informed! I really appreciate it!

>>

>>On 3/17/11 7:24 PM, "[REDACTED] NWD02"

>><[REDACTED]@usace.army.mil> wrote:

>>

>>>Kellie,

>>>FYI. We reduced Garrison releases to 23,000 cfs today (Thursday).
>>>We are starting to see some runoff on the Heart and Cannonball. We
>>>will likely schedule 22,000 cfs Friday and then continue to monitor
>>>the
>>>tributaries.

>>>[REDACTED]

>>>

>>>

>>>-----

>>>Message sent via my BlackBerry Wireless Device

NWO

From: Farhat, Jody S NWD02
Sent: Monday, March 21, 2011 3:23 PM
To: aaron_popelka@moran.senate.gov; Adams, Steve; alan.feyerherm@mail.house.gov; Anderson, G Witt NWD; ansley.mick@mail.house.gov; [REDACTED] NWD; [REDACTED] NWO; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; chad.ramey@mail.house.gov; Charlie Scott; chrisbrown@mail.house.gov; christina.mahoney@mail.house.gov; Cindy_Hall@mccaskill.senate.gov; colin.brainard@mail.house.gov; [REDACTED] NWK; corey_dukes@mccaskill.senate.gov; d_schwietert@thune.senate.gov; Dan.Engemann@mail.house.gov; darwin.curls@mail.house.gov; dayle_williamson@bennelson.senate.gov; Dean.Mathisen@mail.house.gov; deb.vanmatre@mail.house.gov; [REDACTED] NWD02; don_canton@hoeven.senate.gov; [REDACTED] NWO; edwin.elfmann@mail.house.gov; Engelhardt, Bruce W.; eric.bierwagen@mail.house.gov; eric.bohl@mail.house.gov; erick_lutt@bennelson.senate.gov; Farhat, Jody S NWD02; Farmer, Monique L NWO; [REDACTED] NWK; [REDACTED] HQ; Garland.Erbele@state.sd.us; gary.marble@mail.house.gov; Gaul, Steve; [REDACTED] NWK; [REDACTED] HQ02; [REDACTED]; [REDACTED]; harold_stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK; [REDACTED] NWK; janna.worsham@mail.house.gov; Jenny Frazier; Jim.Mitas@mail.house.gov; Jim.Riis@state.sd.us; John Drew; Karen Rouse; ken.kopocis@mail.house.gov; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWK; [REDACTED] NWO; [REDACTED]; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; [REDACTED] NWO; McMahon, John R BG NWD; melissa.roe@mail.house.gov; mike.hayden@outdoors.com; mike.matousek@mail.house.gov; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; patrick.carroll@mail.house.gov; patrick_lehman@johanns.senate.gov; Pavelka, Gregory A NWO; [REDACTED] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [REDACTED] NWD; randy.vogel@mail.house.gov; [REDACTED] NWO; richard.henkle@mail.house.gov; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO; scott.corrie@mail.house.gov; [REDACTED] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [REDACTED] NWK; [REDACTED] HQDA; [REDACTED] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [REDACTED] NWO; [REDACTED]; [REDACTED] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; wayne.brincks@mail.house.gov; Wayne_NelsonStastny@fws.gov; Wells, Mike; Westrup, Nathan; zach_nelson@bennelson.senate.gov
Subject: Gavins Point March Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

All - the March spring pulse from Gavins Point dam is currently on hold due to high flows on the James River in eastern South Dakota, and flows on the Missouri River in excess of the downstream flow limits at Omaha and Nebraska City.

The status of the March pulse is not expected to change over the next several days. Another update will be provided later this week.

Each day a PowerPoint presentation documenting our decision making process will be posted on our website at: <http://www.nwd-mr.usace.army.mil/rcc/>

Call or email if you have questions.

Regards,

Jody

Jody Farhat, P.E.

Chief, Missouri River Basin Water Management

jody.s.farhat@usace.army.mil

Office: 402-996-3840

Classification: UNCLASSIFIED

Caveats: NONE

NWO

From: [REDACTED] NWD02
Sent: Monday, March 21, 2011 1:56 PM
To: Farhat, Jody S NWD02; [REDACTED] NWO
Subject: FW: Garrison releases (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

See note from Kelly Casteel below. The Bismarck regulatory office is checking for us also. I haven't heard anything back from them yet.

Mike

-----Original Message-----

From: Casteel, Kelly D. [mailto:kcasteel@nd.gov]
Sent: Monday, March 21, 2011 1:45 PM
To: [REDACTED] NWD02
Subject: Re: Garrison releases (UNCLASSIFIED)

Mike,

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Kelly

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>>>Classification: UNCLASSIFIED
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>>

>>[REDACTED]

>>

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>>From: Casteel, Kelly D. [mailto:kcasteel@nd.gov]

>>Sent: Friday, March 18, 2011 8:24 AM

>>To: [REDACTED] NWD02

>>Subject: Re: Garrison releases

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>><[REDACTED]@usace.army.mil> wrote:

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>>>We are starting to see some runoff on the Heart and Cannonball. We

>>>will likely schedule 22,000 cfs Friday and then continue to monitor

>>>the

>>>tributaries.

>>>[REDACTED]

>>>

>>>

>>>-----

>>>Message sent via my BlackBerry Wireless Device

>>

>>

>>Classification: UNCLASSIFIED

>>Caveats: NONE

>>

>>

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>

>Classification: UNCLASSIFIED

>Caveats: NONE

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Classification: UNCLASSIFIED

Caveats: NONE

[REDACTED] NWO

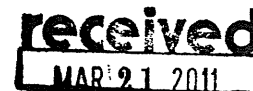
From: [REDACTED] NWD
Sent: Tuesday, March 22, 2011 4:42 PM
To: Blechinger, Erik T NWO; Farhat, Jody S NWD02
Cc: [REDACTED] NWD
Subject: FW: mo dnr ltr (UNCLASSIFIED)
Attachments: mo_dnr_l.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Erik and Jody,

Pongo asked me to send you a copy of the attached letter sent to the CG, re: spring rise operations at Gavins Point.

[REDACTED]
Classification: UNCLASSIFIED
Caveats: NONE



STATE OF MISSOURI Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES

MAR 15 2011

www.dnr.mo.gov

B.G. John R. McMahon
Commander Northwestern Division
U.S. Army Corps of Engineers
PO Box 2870
Portland, OR 97208-2870

Dear General McMahon:

I am writing to urge you to not implement the man-made spring rise operation from Gavins Point Dam in 2011. The State of Missouri experienced widespread flooding in each of the last four years, with significant economic and property damages. Levees damaged by the flooding last spring have yet to be completely repaired. Early forecasts indicate that there is a high likelihood of flooding again this year on both the Missouri and Mississippi Rivers. With the high probability that Missouri again may experience flooding this spring, adding water to an already risky condition should give the Corps ample reason to forego the spring rise operation, especially given the fact that scientific research funded by the U.S. Army Corps of Engineers (Corps) continues to show that the Gavins Point spring rise provides little if any benefit to pallid sturgeon spawning.

Lands along the Missouri River are some of the most productive farmland in America, supporting a very vibrant agricultural industry. Towns, cities, and key infrastructure are also located along the River. As you are aware, there was significant flooding on the Missouri River last year and many levees in northwest Missouri were either breached or severely damaged. While progress has been made in rehabilitating the levees, full flood protection has not been restored. Conducting the Gavins Point spring rise unnecessarily adds to the risk of flood damages, especially in areas where levee repairs are not complete or where vegetation on repaired levees is not well established.

Research funded by the Corps continues to find that the spring rise is not required to cue the pallid sturgeon to spawn. Rather, hours of sunlight and water temperature have been identified as the significant factors in pallid sturgeon spawning. These findings have remained consistent over the past five years. Research also has found that the pallid sturgeon is more numerous on the lower Missouri River and Mississippi River than once thought. Additionally, monitoring programs have shown that the pallid sturgeon stocking program is successful as an increasing number of pallid sturgeon are reaching maturity.

It is evident that progress is being made in the recovery of the pallid sturgeon. However, since none of this progress has been attributed to the Gavins Point spring rise and with the high risk of



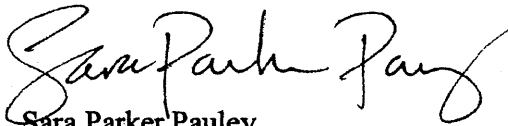
Recycled Paper

B.G. John R. McMahon
Page Two

flooding on the Missouri River this spring, I urge the Corps to take the only prudent course of action and suspend the Gavins Point spring rise in 2011. The State of Missouri continues to support the Corps efforts to collect scientific information on the pallid sturgeon, so that informed decisions can be made. Please contact Mike Wells, Deputy Director, Missouri Department of Natural Resources at (573) 751-4732 if you have any questions regarding this letter.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

A handwritten signature in cursive script, reading "Sara Parker Pauley".

Sara Parker Pauley
Director

SPP:mwb

c: Mike Wells, Deputy Director, Department of Natural Resources

[REDACTED] NWO

From: [REDACTED] NWK
Sent: Tuesday, March 22, 2011 1:18 PM
To: Farhat, Jody S NWD02
Subject: RE: Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

A very well written letter that covers all aspects -- nice job! Only item I would suggest was in the 2nd to last line on page 1 -- add in 'successful' between 'limiting pallid'. And just for my own education, in the 3rd paragraph, does the pulse not also attenuate between Gavins and Missouri?

I thought you covered the topic thoroughly at MLDDA, so the letters message was strange to me. Would have been nice if they recognized your current efforts and how the process was working as designed -- forecasts say the downstream targets might be exceeded, so no March pulse. Maybe one of these years!

[REDACTED]
-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Tuesday, March 22, 2011 11:47 AM
To: [REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWK;
[REDACTED] NWK
Cc: Streckfuss, Ted H NWO
Subject: RE: Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] - This is the typical letter we get every year from the MO DNR, Attorney General or the Governor asking us not to implement the pulse. I'm working on a response for the CG's signature; the draft which has been reviewed by Witt is attached. The CG would like it to go out this week. I'll send you a pdf copy of the final when it's signed.

Jody

-----Original Message-----

From: [REDACTED] NWK
Sent: Tuesday, March 22, 2011 11:24 AM
To: [REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWK
Cc: [REDACTED] NWO; Farhat, Jody S NWD02
Subject: FW: Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Not sure if you have seen this letter yet. We will need to be prepared to discuss with Sara Pauley if it comes up during our 6 April lunch. Pls provide a point by point response (I assume Jody is already working so check with her first as we should be able to just use her response) that we can use on 6 April. Thx

Respectfully,

[REDACTED]
Deputy District Engineer for Project Management Chief, Planning, Programs and Project Management Division US Army Corps of Engineers, Kansas City District

(W) [REDACTED]

(C) [REDACTED]

-----Original Message-----

From: Tom & Karla Waters [mailto:waters4@ix.netcom.com]

Sent: Monday, March 21, 2011 12:42 PM

To: Roe Melissa (Congressman Graves); Stundebek John & Carol; Colvin Eric (Howard Levee District #3); Famuliner George; Hawkins Garrett (MO Farm Bureau); Vandiver Perry; Shirley Steve; geibpallets@yahoo.com; Stundebek Matt; Frazier Jenny (Missouri AGO); Heil Nelson; Potter Donald; Marshall Gary (MO Corn Growers); Spickert Donna (Congresswoman Hartzler); Kay Morris; Comodeca Mike; Padgett Darrel; Endsley Art & Christie; Oberdiek Gary; Wiedemeier Dan; Kerperin Kevin & Bob (Osage River); LePage Bill; Guier Nelson; Kirby Russ & Marcia; Dailey P.E. Steve (Fairfax Drainage District); Nolker Barb (Ray Co Farm Bureau); Kirby Karen; Alexander Terry (Consolidated North County LD); Dowdy Larry (Little River Drainage District); Duensing Doug & Carol; Engemann Dan (Congressman Luetkemeyer); Gooch Don; Gill John; Nail David; Lay Bill; Taylor Steve; Williamson John; [REDACTED] A NWK; Lucietta Don (Senator Blunt); Matousek Mike (Congressman Graves); Stones Harold (Senator Roberts); Bohl Eric (Congresswoman Hartzler); Connor Jeffrey (Congresswoman Emerson); Huston John P.; Cothen Joe (EPA Region 7); Hafemeister Mary (Lower Chariton); Zeysing Robert H.; bmillerjr@emissourian.com; Weber Alan; Monks Janie (MO DNR); Beacom William; Meyer Steve; Leimkuehler Doris; Muench, Lynn M LRP; Fletcher W.C.; kctv@kctv5.com; [REDACTED] NWD; Jorns, Byron COL HQDA; Poldberg Mindy (Iowa Corn Growers); Ebersole Atalie (Congresswoman Emerson); Hockemeier Max; Gauthier Vincent (KC Port Authority); Hofbauer, Germaine HQ02; Gibbs Joseph; Wright Derry; Hershey Harry; Townsend Deanne; [REDACTED] NWK; Klingner Michael; Curtis Don (HDR); Coats Derek (Senator Blunt); Reeder Brenda; Richards Eugene (KTIS Radio); Jenkins Ronald; Meyerkorth Richard; rcityhall@aol.com; Russell McKinney (Ham Hill Farms, Inc.); Mahoney Larry; Voss Terry; Flores J.R. (NRCS); Richmond Vicki (Missouri River Relief); Appleton Seth (Congressman Luetkemeyer); Twyman Maria Antonia; LePage Paul W.; Lyon Ashley; Hayes Rick; Twyman Mike; Davis Paul; Kuenzel Danny; Copeland David; Humphreys David; Bryan Bill (MO DNR); Keisker Larry; Stewart Kay (Congresswoman Hartzler); Shaw Tim; Gibson Ron; Asbury Randy (CPR); Westbrook Rick; Johnson Glenda; Ellis Lauren (Congressman Akin); Rhode Paul (Midwest Area Waterways, Inc.); Anderson, G Witt NWD; Ryland Utlaut (Mid-Missouri Energy, LLC); [REDACTED] NWK; Samson Maryann; Cruse, Lester External Stakeholder; Marble Gary (Congressman Luetkemeyer); Hurst Blake; Dickey Scott; Little Erin (KMBC-TV); Johnson Jerilyn; Banks David (L488); Jasper John; Brockmeier Joe; Blakley Ron; Hurst Blake (Missouri Farm Bureau); Edwards Jim; McManus John (MO AGO); Drew John (DNR); Hockemeier Farrell; Johnston, Paul T NWO; Thomas Joe; Pozzo John; Olin Arvin & Joan; Hartnett Katy (Congressman Carnahan); oem@kcmo.org; Brown Chris (Congressman Luetkemeyer); [REDACTED] NWO; Gerlach Travis; Brockmeier Michael; Plattner Aaron; Dewey Dave (River Marine Enterprises); Sieck David; Roettger Eugene (MO Valley LD); Casner Kevin (Sugartree LD); Blair Dennis; Vanwinkle Terry; Imgarten Dave (Imgarten Farms); Rogers Mac (Ray County Ambulance District); Wyatt Charles; Walton James (KCMO Water); Maxwell Wes (FM Global); Diamond Kim; Schwoeppe Kenneth; Kuhler Steve; [REDACTED] MVS External Stakeholder; Dohrman Ben (Bartlett Grain); Macy Babette (Kissick Construction); Lyberger Jesse; Thorson John; Myers, Larry L NWK; Diederich Stephen (Wilton Landowner's L&D); Moran Medina (WCI); Grisham Becky (MO Corn Growers); Kinne Zach (Senator Blunt); Newham Kent (Ray-Carroll County Grain Growers); Pogge Frank (DFP Environmental Consulting, LLC); Disinger Katy (Senator McCaskill); Moyer Nathan; Cassidy Dan (Missouri Farm Bureau); Hall Cindy (Senator McCaskill); johnsonsj@centurytel.net; Blair, Amy E NWK; Sloniker Barbara; Phillips Tim (Ray Carroll); Perry Meagan; news@nbcactionnews.com; Wildberger Dottie (Halls Levee Distrit); Manson Ann

Edwards; Ratto Mark (Congressman Graves); Helms, Willem NAD; Hommes Harold; Buckallew Adam (MO Soybean Assn.); Owsley Chuck; Farley Mike (Consolidated North County LD); Clark Scott; Berkley Jim (EPA); Bacon Bob; [REDACTED] NWK; Bledsoe Ron (Saline County LD); Leeds Terry (KCMO Water); Engemann Steve; Ramsey Mark (County Bank); Jackson Bill; Merensmeyer Wade (Ray-Carroll); Stone Mike (KMZU Radio); [REDACTED] NWO; Livers Richard; Ott Douglas (County Bank); Woolley Leslie (Congressman Cleaver); Luther Tim; Lewellen Rodney (Mi-De LD); Elsbury Angela; Eagleton Tim (FM Global); Turley Sherrie (MODOT); Smart Peggy; Berendzen Buffy (MO Dept of Ag); Shorr David; Poche David; Buschjost Martha (DNR); Goodwin Clive; Sandidge Brent; Haldeman Jeremy (Congressman Carnahan); [REDACTED] NWK; Stegmann Michael D.; Vickers Kyle; Knickmeyer Mary; Fletcher John; [REDACTED] MVS External Stakeholder; Robinson Kim; Womack Abner; Vincze Robert; info@waterways.org; Madgett John; Vandiver Gary; Melzer Gary; kmbcnews@gmail.com; Kipping David; Kircher Lisa; Twyman Tim; Schwoeppe Suzanne; Jeff@concordiaimplement.com; Attema Menno; Littleton Bob; Evers, Jason A MAJ NWK; Durham David (Ray Co. LD #2); Popelka Aaron (Senator Moran); Wolfe Alan (ESI Contracting Corp); Wheeler Jim; Davis Art; Nordwald Mike (Ray-Carroll); Gloe Harold; Klenklen Chris (MO Dept. of Ag); Rudy James (Jay) USACE Napoleon; Walley George; Noll Rich (KCMO Water); Waters Linda; Maczuk Bill; Binder Darwin (L497); Nikodum Don; [REDACTED] HQ02; Dunn Thomas (Gateway Arch Riverfront); Glosemeyer Maurice; Moody Wayne; Jacob Scott; Johnson Jerilyn; newsdesk@kctv5.com; Rea Donald (St. Louis Water); Foreman Jarrell (Ray County FSA); Perry Ernie (MODOT); Daniels-Murray Larry (D Bar M LLC); Perry Bobby; Warren Beth; [REDACTED] NWK; [REDACTED] LRP; Stegmann Richard (Lange-Stegmann); Townsend Tom; Bell Tom (USFWS); McMullen Dalla; Perry Bob; Truesdale Sharmon (Waterways Council, Inc.); Kaiser Glenn & Nancy; Noltensmeyer John (Montgomery County); Armstrong Mike (WaterOne); Buhrmester Rex; Knopf David; Schupp Mark; Morgan Steve; Markt Carla; Tiemeyer Paul (Rock Port); Jacoby Karin; Boss Naomi (Congressman Graves); Keck J. (St. John's Levee & Drainage); news@kmbc.com; Arnold Mike; Strauser Deanne (USACE); Klippenstein Brian (Senator Blunt); Dukes Corey (Senator McCaskill); Vinning Rob; Howlett David (Price Howlett); Dorsey Darrell (BPU); Horgan Tom (Ameren); Perry Kristin (ALOT); Henry Peter (Senator Blunt); Forck Kelly (Cole Junction LD); Zimmer Peter; [REDACTED] NWK; O'Dell Joyce; Susan@MissouriRuralServices.com; Dieckmann Phillis (City of Levasy); Schluter C.C.; Fisher Sherry (AG Koster); Manson Gary (Brunswick-Dalton LD); Paulsmeyer Duane; Elmore John; Nelson-Stastny Wayne (USFWS); Nance Bob; news@wdaftv4.com; Meyer Randy; [REDACTED] NWK; Carr Mark; Cieslik Larry (HDR); Seigfreid Paul; sswindler@mfa-inc.com; Stucker Marcus; [REDACTED] HQ02; Gentry Allen; Human David; Waters Glen; Smith Katie; [REDACTED] NWK; Schenk, Kathryn M NWO; Nail Jeff; Klingner Diaz Karla; Price Marge (Price Howlett); Imgarten Barry; McNelly Josh (Ray-Carroll Crop Insurance); Sullivan Tade; Payne Tom (Dean-Mizzou CAFNR); Hofmann, Anthony J COL NWK; Mitas, Jim MVS External Stakeholder; Dawson John; Massman John; Franken John (Attorney); McMahon, John R BG NWD; McNeall Ron; Prenger Daniel (Prenger Farms); Porter Clark (Senator McCaskill); Hecox Rob; Slade Kathy; Johnson Sam; Davis Adam (Congresswoman Hartzler); Hoffman Linda (KCMO Water); Kucera Ron; Cowherd Emmalie; Waters Farms, Inc.; Holloway Leslie (MO Farm Bureau); Brennan Larry (Kaw Valley Drainage); Erfling Wilmer; Lucy Gary & Sandy; Blalock Steve; Meng Lanny; Ferguson Roger; Jenkins Holly (Congressman Cleaver); Redmond Jeane (Z Bar Farms); Schlicht Mark (ESI Contracting Corp); Daniels Jimmy (Whitham Levee District); Hardecke Ron; Stock Tom; Alder Powers; Flickner Ryan (Senator Roberts); Trachsel Wayne (Chamois LD); Davids@Sydenstrickerimp.com; Campbell Billy (Goppert Financial Bank); Randy Asbury; Gebhardt Jeffrey (Lower Chariton); Babb Robert; Munson Ross Carol; Williamson Bob (KCMO Water); Mayfield Ann; Ruch, Robert J COL NWO; Whitley Melvin; [REDACTED] HQ; Steele Brad; Proffitt Jim; Manson Phil (Brunswick-Dalton LD); Schrempp Tom; Schaffer John (Union Township Drainage District); Jorgensen Don; Stouffer Bill; Ludwig Dale (MO Soybean Assn.); Rouse Karen; Frakes Lanny; Blackwell Bill; Rehmeier Dean (Augusta Bottom Levee Protection Assoc.); McMurry Dave (UMIMRA); Clemens Jim; Fuhrman Dan; Farhat, Jody S NWD02; McNeall Raymond

Subject: Spring Rise

Friends:

Please see the attached letter from the Missouri Director of the Department of Natural Resources, Sara Pauley, to Brigadier General John McMahon regarding the Spring Rise. I appreciate Director Pauley's efforts on behalf of those of us living and working along the Missouri River.

Tom Waters, Chairman
Missouri Levee & Drainage District Association

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

NWO

From: [REDACTED] NWO
Sent: Tuesday, March 22, 2011 7:59 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02
Cc: [REDACTED] NWO
Subject: FW: Ice Jam (UNCLASSIFIED)
Attachments: Allen_Schlag.vcf

Classification: UNCLASSIFIED
Caveats: FOUO

Just FYI at this point. With the Missouri River open at Bismarck that should help alleviate problems if the ice moves out of the Heart...

-----Original Message-----

From: Senger, Mary H. [mailto:msenger@nd.gov]
Sent: Tuesday, March 22, 2011 7:54 AM
To: [REDACTED] NWO
Subject: FW: Ice Jam

FYI

Mary H. Senger, Emergency Manager
Burleigh County Emergency Management
2301 University Dr, Bldg 21
Bismarck, ND 58504
Phone: 701.222.6727
Fax: 701.221.6804
msenger@nd.gov
<http://burleighco.com>
Facebook: <http://www.facebook.com/burleighem>
Twitter: <http://twitter.com/burleighem>

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☐ Think Green! Please do not print this e-mail unless it is completely necessary.

-----Original Message-----

From: Allen Schlag [mailto:Allen.Schlag@noaa.gov]
Sent: Monday, March 21, 2011 3:15 PM
To: Ron Manchester; MORTON
Subject: Ice Jam

Ron and Tammy,

Just wanted to touch base with you a little bit on the Heart River and what is actually a pretty impressive ice jam located from about highway 1806 to about 5 miles west of Mandan. Jeff and I took a bit of a drive along the Heart just a few minutes ago to view the ice jam. Water is clearly moving through the ice although not nearly as easily as I would like to see. Based on our drive, this ice pack is 6.5 - 7 miles long!!!

IMHO, the ice is not significantly restricting flow at this time, perhaps creating an extra 3-4 ft of river stage. If the ice were a little more cohesive and creating higher water (right now it's 13.69 ft), I would be considerably more concerned. Flood stage is 17 ft, so we have a little bit of freeboard that is keeping me from justifying a flood watch or warning. FYI, I am likely to release a text product in the form of a Hydrologic Outlook. This should help get the word out without creating the level of concern that a flood watch, advisory, or warning would.

Regrettably, the only two real ways to release stuck ice this large is either, 1.) let it melt or 2.) float it away. With respect to option #1, that is not likely to be any time soon given its dimensions and the lack of significantly above freezing temps. The second option is also the least favored of all, it would take a couple of more feet of water (at a minimum) to "float" the ice and get it moving again. That would put us dangerously close to flood stage and 2 more feet of water is really only a guess, it might take 4 or 5 ft.

As always, if you have any questions give me a call.

We will continue to keep a close eye on this one and see where the ice eventually takes us with regard to river levels. But at this point it is clearly NOT a flow related event, not nearly as much water was in the channel downstream as the stage at the Mandan 4 West location would suggest.

Regards,

Allen

--

Allen J. Schlag

Service Hydrologist, National Weather Service - Bismarck WFO Ph. 701-250-4495 Fax 701-250-4450

Classification: UNCLASSIFIED

Caveats: FOUO

NWO

From: [REDACTED] NWD02
Sent: Tuesday, March 22, 2011 7:11 AM
To: Farhat, Jody S NWD02; [REDACTED] NWO
Subject: FW: Ice Jam (UNCLASSIFIED)

Importance: High

Classification: UNCLASSIFIED
Caveats: NONE

FYI.

-----Original Message-----

From: Casteel, Kelly D. [mailto:kcasteel@nd.gov]
Sent: Monday, March 21, 2011 4:06 PM
To: [REDACTED] NWD02
Subject: FW: Ice Jam
Importance: High

On 3/21/11 3:25 PM, "Anton, Amy J." <ajanton@nd.gov> wrote:

>FYI...

>

>I also got a call from the Sioux County Sheriff/EM this morning
>regarding an ice jam by the bridge approx. 2.5 miles north of
>Cannonball on 1806 impacting pastureland. The Sheriff/EM indicated the
>jam is about 800-100 meters on the west side of the road.

>

>-----Original Message-----

>From: Allen Schlag [mailto:Allen.Schlag@noaa.gov]
>Sent: Monday, March 21, 2011 3:15 PM
>To: Ron Manchester; MORTON
>Cc: Ross Wolford; Tom Gurss; Jeffrey Savadel; John Paul Martin; Joshua W.
>Scheck; Harlyn Wetzel; William Abeling; Todd Hamilton; Leonard
>Peterson; Rich Kinney; Thomas S Walker; Janine Vining; Ken Simosko;
>Janine Vining; Nathan Heinert; Patrick Ayd; Lindsay Tardif-Huber; Tony
>Merriman; Jimmy Taeger; Senger, Mary H.; Stockert, Gary K.; Anton, Amy
>J.; Donahue, Kathleen B.
>Subject: Ice Jam

>

>Ron and Tammy,

>

>Just wanted to touch base with you a little bit on the Heart River and
>what is actually a pretty impressive ice jam located from about highway
>1806 to about 5 miles west of Mandan. Jeff and I took a bit of a drive
>along the Heart just a few minutes ago to view the ice jam. Water is
>clearly moving through the ice although not nearly as easily as I would
>like to see. Based on our drive, this ice pack is 6.5 - 7 miles long!!!

>

>IMHO, the ice is not significantly restricting flow at this time,
>perhaps creating an extra 3-4 ft of river stage. If the ice were a
>little more cohesive and creating higher water (right now it's 13.69
>ft), I would be considerably more concerned. Flood stage is 17 ft, so
>we have a little bit of freeboard that is keeping me from justifying a

>flood watch or warning. FYI, I am likely to release a text product in
>the form of a Hydrologic Outlook. This should help get the word out
>without creating the level of concern that a flood watch, advisory, or warning would.
>
>Regrettably, the only two real ways to release stuck ice this large is
>either, 1.) let it melt or 2.) float it away. With respect to option
>#1, that is not likely to be any time soon given its dimensions and the
>lack of significantly above freezing temps. The second option is also
>the least favored of all, it would take a couple of more feet of water
>(at a
>minimum) to "float" the ice and get it moving again. That would put us
>dangerously close to flood stage and 2 more feet of water is really
>only a guess, it might take 4 or 5 ft.
>
>As always, if you have any questions give me a call.
>
>We will continue to keep a close eye on this one and see where the ice
>eventually takes us with regard to river levels. But at this point it
>is clearly NOT a flow related event, not nearly as much water was in
>the channel downstream as the stage at the Mandan 4 West location would
>suggest.
>
>Regards,
>
>Allen
>
>--
>Allen J. Schlag
>Service Hydrologist, National Weather Service - Bismarck WFO Ph.
>701-250-4495 Fax 701-250-4450
>

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Wednesday, March 23, 2011 9:02 AM
To: Farhat, Jody S NWD02
Subject: RE: Gavins Point Release Charts (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,
I added the remainder of the slides to the presentation GavinsPointReleaseCharts.pptx.
[REDACTED]

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Tuesday, March 22, 2011 4:14 PM
To: [REDACTED] NWD02
Subject: RE: Gavins Point Release Charts (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

One more thing. I need 2006 GAPT releases in a format like slides 5-8.

Thanks,
Jody

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Tuesday, March 22, 2011 3:30 PM
To: [REDACTED] NWD02
Subject: RE: Gavins Point Release Charts (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks, [REDACTED]!

-----Original Message-----

From: [REDACTED] NWD02
Sent: Tuesday, March 22, 2011 2:53 PM
To: Farhat, Jody S NWD02
Subject: RE: Gavins Point Release Charts (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

No problem - I should be able to get them for you tomorrow morning.

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Tuesday, March 22, 2011 2:40 PM
To: [REDACTED] NWD02
Subject: RE: Gavins Point Release Charts (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks, [REDACTED] These are great. Just what I need.

I especially like the last 2 slides with Sioux City and Omaha shown. I know I only asked for the 2 years with natural pulses, but would it be much trouble to do similar slides for 2006, 2008 and 2009?

Thanks,
Jody

-----Original Message-----

From: [REDACTED] NWD02
Sent: Tuesday, March 22, 2011 11:25 AM
To: Farhat, Jody S NWD02
Subject: Gavins Point Release Charts (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,
I've created some release charts in:
V:\Public\PowerPoint\PP_2011\GavinsPointReleaseCharts.pptx. Slides 5 to 8 show navigation flows, forecasted pulses, and actual daily releases for 2007 to 2010. Slides 15 & 16 have 2007 and 2010 Gavins Point hourly releases along with Sioux City and Omaha flows.

Let me know if you need anything else.

[REDACTED]
Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED

From: Turner, Robert [Robert.Turner@orise.orau.gov]
Sent: Thursday, March 24, 2011 1:44 PM
To: marian.maas@cox.net
Cc: Sarah Palmer; radcliff@ecr.gov; Farhat, Jody S NWD02
Subject: RE: MR ISAP River Ops and Flows webinar agenda and additional info
Attachments: Spring Pulse Implementation 2006-2010 for ISAP.pdf

Marian,

PowerPoint said a bunch of stuff might be lost when I tried to backsave to compatibility format, so I saved it as a PDF file, attached - it looks ok on quick glance, but probably lost any special effects that may be there...

Hope this works for you.

Robb Turner

Oak Ridge Institute for Science and Education

Oak Ridge Associated Universities

PO Box 117 MS-17

Oak Ridge, TN 37831-0117

865.574.9345

865.241.9018 (fax)

Robert.Turner@orise.orau.gov

From: marian.maas@cox.net [mailto:marian.maas@cox.net]
Sent: Thursday, March 24, 2011 2:34 PM
To: Turner, Robert
Subject: Re: MR ISAP River Ops and Flows webinar agenda and additional info

Robb,

Is it possible to resend the attachment in the older Word format? I don't have the newer Word on my computer, and I am unable to open the attachment. I expect it will go on WebEx and I could access it there, but I believe it isn't placed on WebEx until after the webinar.

Sorry for the inconvenience. Don't bother if it's too much of a hassle; I'll listen to the presentation and take notes and then read the ppt when it gets placed on WebEx.

Thanks,

Marian

Marian Maas, Ph.D.

MRRIC- Water Quality

NE Wildlife Federation

marian.maas@cox.net <mailto:marian.maas@cox.net>

402-293-0235

From: Turner, Robert <mailto:Robert.Turner@orise.orau.gov>

Sent: Thursday, March 24, 2011 10:26 AM

Subject: MR ISAP River Ops and Flows webinar agenda and additional info

Greetings,

The MR ISAP "River Operations and Flows" webinar is scheduled for Monday, March 28 at 2:00-4:00 EDT, 1:00-3:00 CDT.

Call-in and log-in information:

USA Toll-Free: (877)336-1828

ACCESS CODE: [REDACTED]

Security Code (if needed) [REDACTED]

Web Meeting Address: <https://www.webmeeting.att.com>

Meeting Number(s): (877)336-1828

ACCESS CODE: [REDACTED]

Agenda (EDT)

2:00 Login, introductions, and review of agenda and ground rules – Robb Turner

2:10 Presentation by Jody Farhat, Corps of Engineers

2:30 Presentation by Robb Jacobson, USGS

2:50 Questions from panel and discussion

4:00 Adjourn

We will have the presenters go through their presentations uninterrupted, then follow the presentations with questions from the panel one by one, rotating so that each member asks a question, and logical follow-ons, then passing to the next member.

Time on these webinars is limited. We've asked presenters to limit presentation time to maximize Q&A discussion with the panel. Presenters may wish to include more slides in their ppt than they actually plan to present, perhaps in anticipation of questions or as supplementary information. The panel may request additional information during Q&A or after the webinar. MRRIC members may suggest additional materials or presentations after the webinar based on what they've heard. (Remember that all such requests/suggestions must be made through the USIECR/TPSN, Sarah/Robb, per the agreed procedure.)

These webinars are being recorded and will be available quickly for review on the MRRIC WebEx (under Webinars tab) and with a little more delay on the public USIECR ISAP web site <http://projects.ecr.gov/moriversciencepanel/>.

Jody Farhat's presentation is attached. Robb Jacobson's presentation, along with some related read-aheads, is available at ftp://ftpext.usgs.gov/pub/cr/mo/columbia/Jacobson/for_MR_ISAP/ <ftp://ftpext.usgs.gov/pub/cr/mo/columbia/Jacobson/for_MR_ISAP/> .

Expected webinar participants including ISAP members, presenters and folks on deck to answer questions, preregistered observers, and TPSN/facilitation/leadership team are listed below.

Observers and participants not speaking are asked to please mute your phones to reduce distractions and echo on the line.

ISAP Panel members:

Margaret Palmer

Martin Doyle

Adrian Farmer

Christopher Guy

Steven Bartell

Dennis Murphy

Presenters and on deck for questions:

Jody Farhat

Robert Jacobson

[REDACTED]

[REDACTED]

[REDACTED]

Preregistered observers:

Marian Mass

Joe Gibbs

Paul Lepisto

Jim Becic

Rae Olsen, Gary Davis, Pat Erger

Art Gehnert

Steve Mietz

Karen Rouse

Mathew Vitello

Kate Vandemoer

Henry Maddux

Wayne NelsonStastny

[REDACTED]
Jim Riis

France, Susan

Jason Skold

Stone, Wayne

Redmond, Jim

Zuerlein, Gene

Sue Lowry

Jodee Pring

[REDACTED]
Don Jorgensen

Randy Asbury

Carol Hale

[REDACTED]
[REDACTED]
[REDACTED]
Erik Blechinger

Steve Fisher

[REDACTED]
[REDACTED]
Bill Lay

[REDACTED]
[REDACTED]
TPSN/Facilitation/Leadership team:

Robb Turner

Brian Herndon

Paul De Morgan

Gail Bingham

John Thorson

Dave Sieck

Pat Lewis

Bridget Radcliff

[REDACTED]

Thanks,

Robb Turner, PhD

MRRIC TPSN

Oak Ridge Institute for Science and Education

Oak Ridge Associated Universities

PO Box 117 MS-17

Oak Ridge, TN 37831-0117

865.574.9345

865.241.9018 (fax)

Robert.Turner@orise.orau.gov <mailto:Robert.Turner@orise.orau.gov>

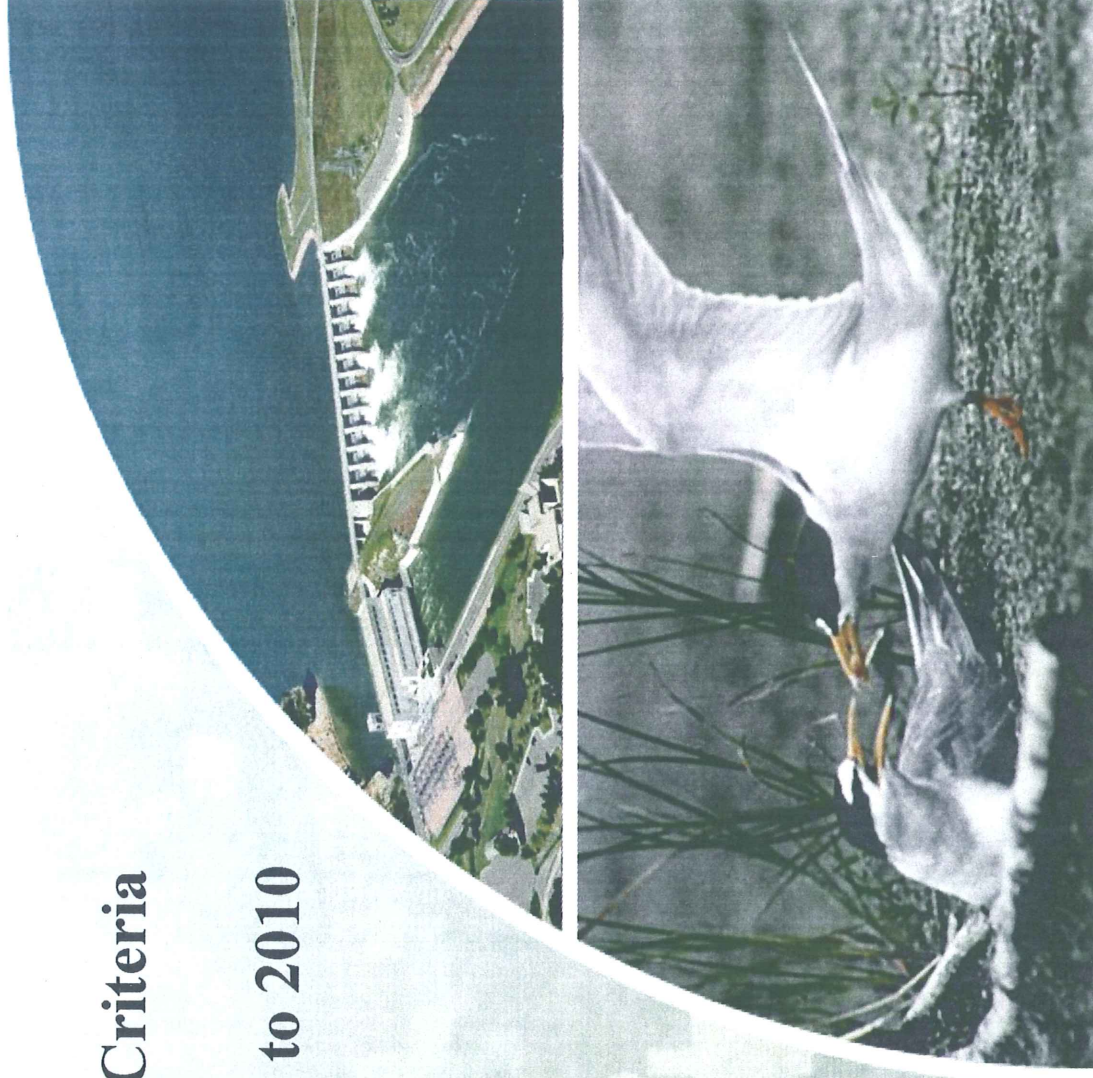
Missouri River Mainstem Reservoir System Gavins Point Spring Pulse

Master Manual Technical Criteria and Implementation from 2006 to 2010

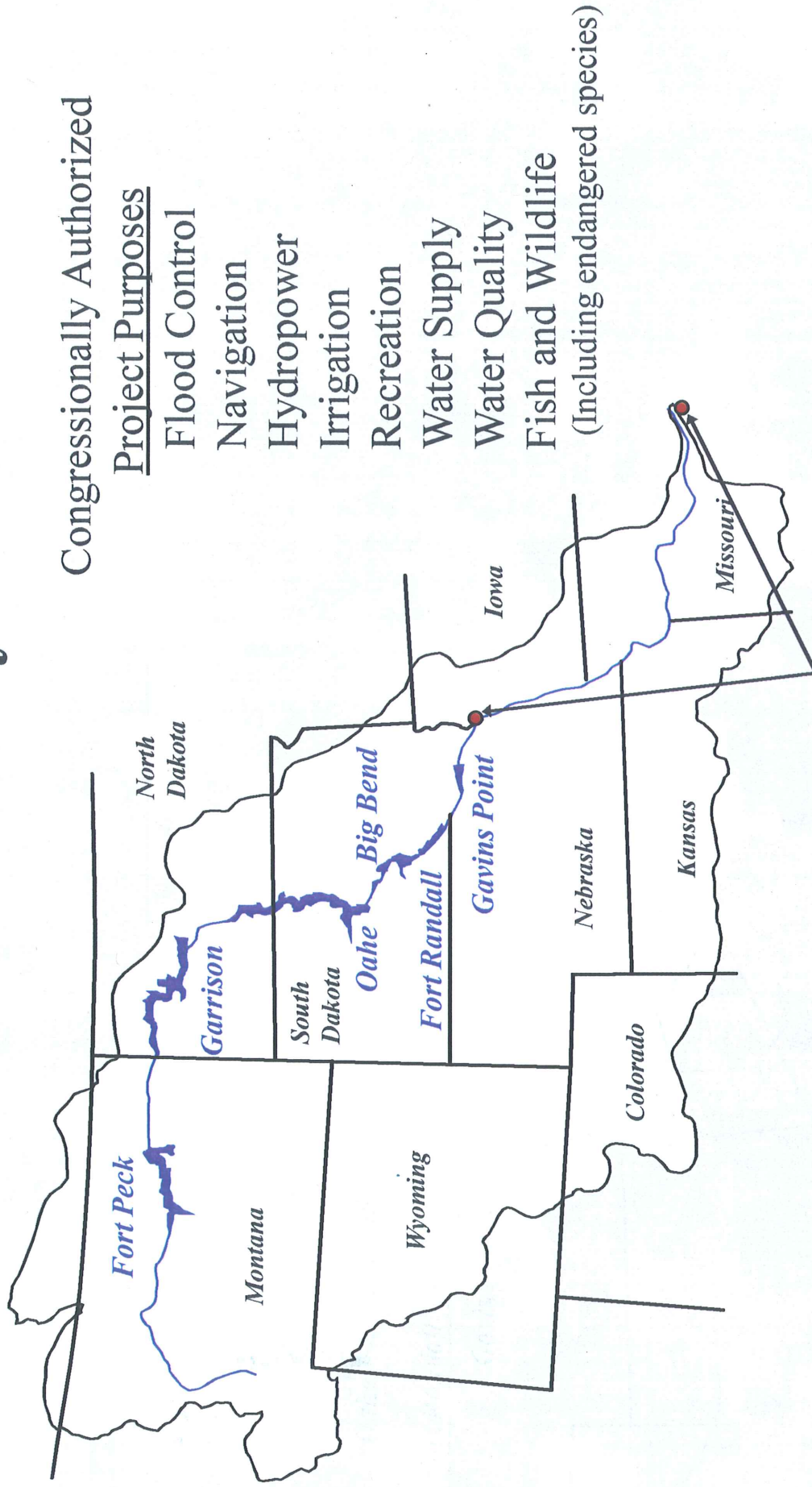
Jody Farhat, P.E.
Chief, Missouri River Basin Water Management
March 2011



US Army Corps of Engineers
BUILDING STRONG®



Missouri River Mainstem Reservoir System



Congressionally Authorized

Project Purposes

Flood Control

Navigation

Hydropower

Irrigation

Recreation

Water Supply

Water Quality

Fish and Wildlife

(Including endangered species)

Bank Stabilization and Navigation Project

Sioux City, IA – St. Louis, MO

Spring Pulse from Gavins Point Dam



- Spring Pulse is intended to mimic the natural ebb and flow of the river
 - ▶ Provide suitable spawning cues
 - ▶ Provide connectivity to low lying lands
 - Increased productivity
 - Increased survival and recruitment
 - ▶ Condition spawning habitat
- Specific technical criteria in Master Manual define pulse magnitude, timing and duration
- Stop protocol included for drought and flood conditions

March Pulse from Gavins Point

- Estimated peak magnitude
 - ▶ 5,000 cfs minus the flow in the James River
 - ▶ Duration of peak flows = 2 days
 - ▶ Flows return to navigation level over 5 days
- Pulse initiated at start of navigation season
 - ▶ 21 March to 31 March



March Pulse from Gavins Point

- Estimated downstream stage change
 - ▶ Sioux City to Omaha 1.25 feet
 - ▶ Nebraska City to Kansas City 1.0 foot
 - ▶ Boonville to Hermann 0.5 foot
- Downstream flow limits in effect to reduce risk of flood damages
 - ▶ River forecast includes radar detected precipitation and NWS forecasted precipitation



May Pulse from Gavins Point

- Estimated peak magnitude
 - ▶ 9,000 to 20,000 cfs depending on the 1 May system storage and runoff forecast
 - ▶ Duration of peak flows = 2 days
 - ▶ Flows return to navigation level over 10 days
- Timing between 1 May and 19 May
 - ▶ Water temperature
 - ▶ Nesting terns and plovers
 - ▶ Downstream flow limits

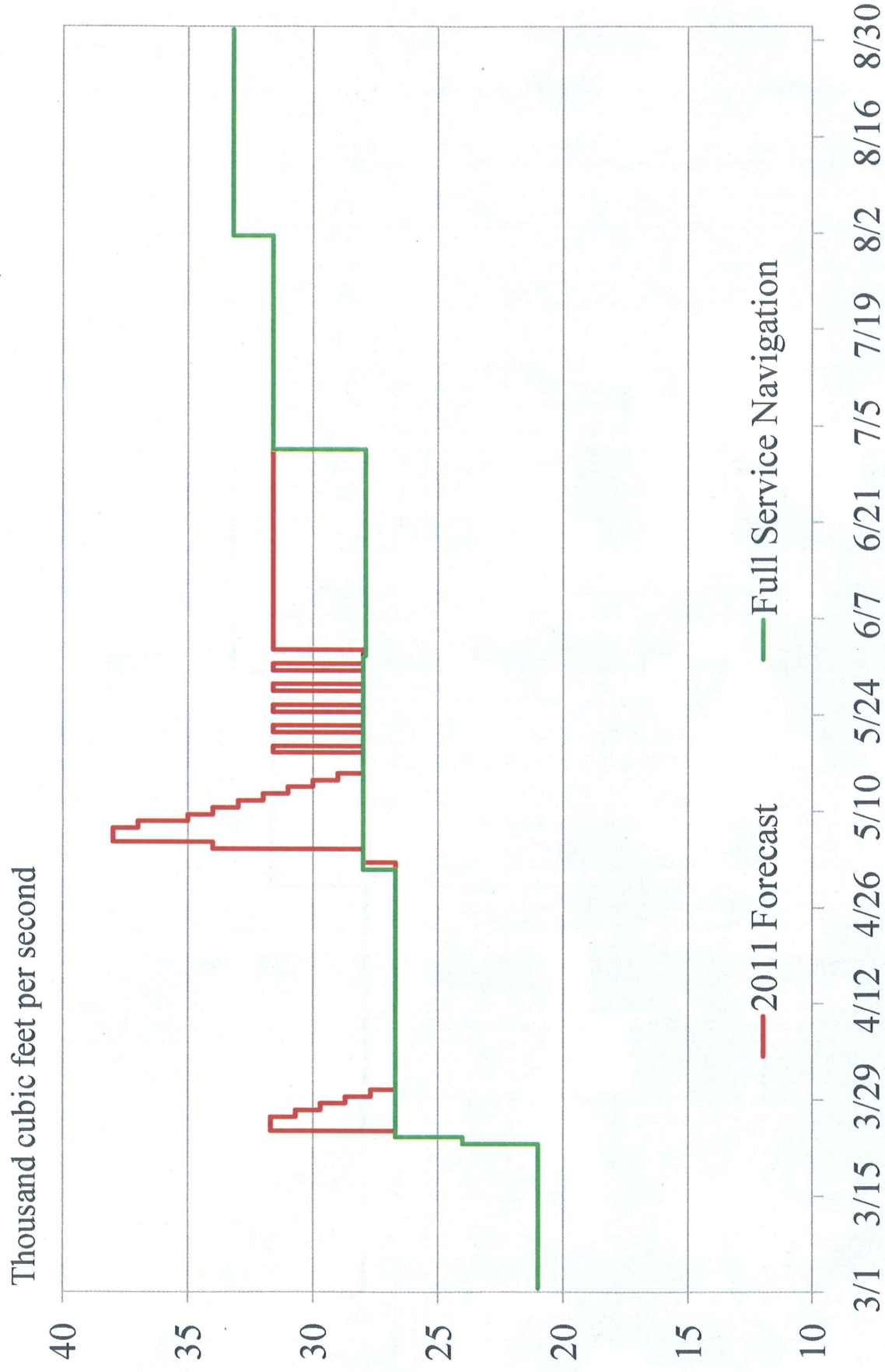


May Pulse from Gavins Point

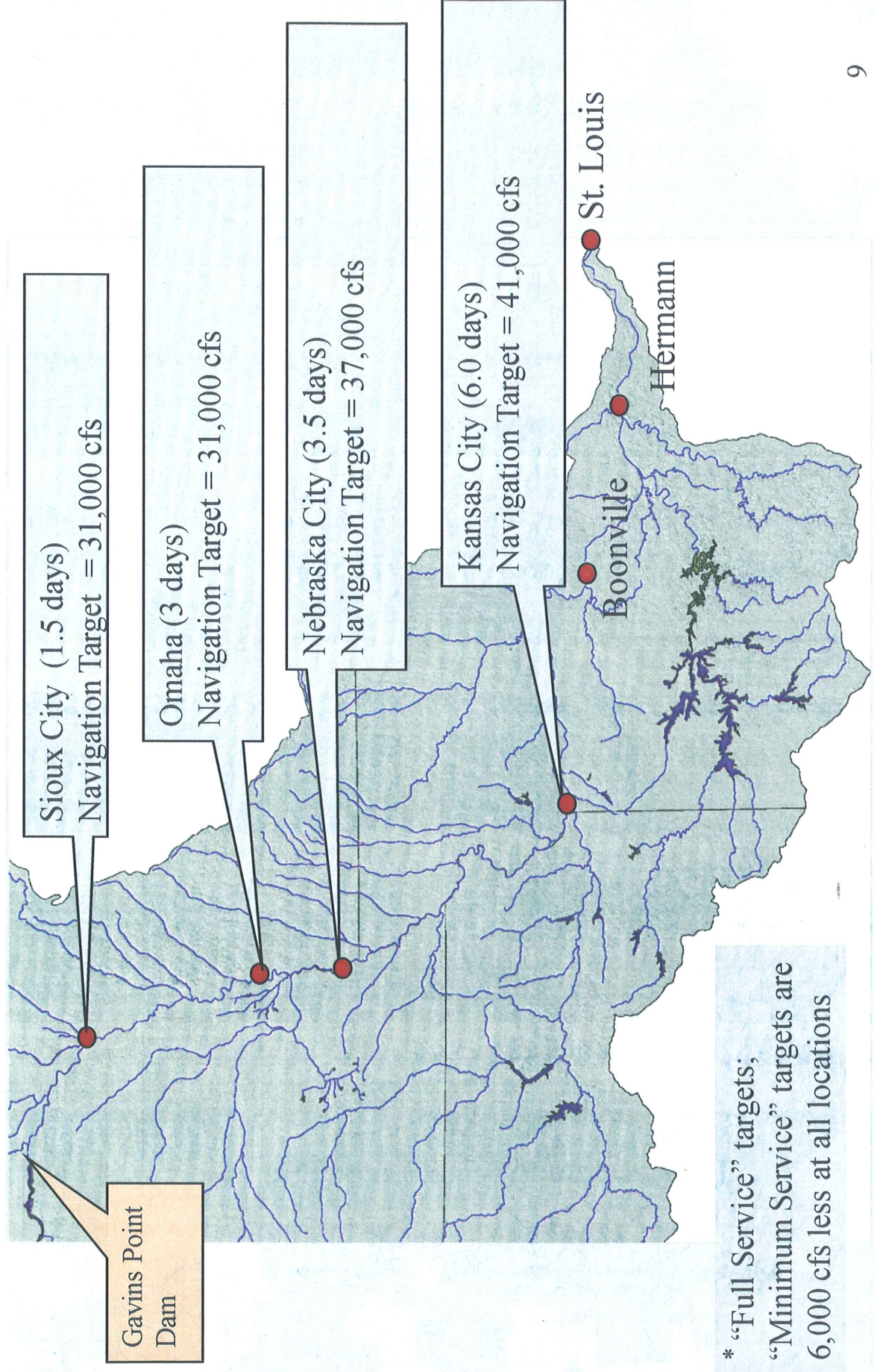
- Estimated downstream stage change
 - ▶ Sioux City to Omaha 2.5 to 4.5 feet
 - ▶ Nebraska City to Kansas City 2.0 to 3.5 feet
 - ▶ Boonville to Hermann 1.5 to 3.0 feet
- Downstream flow limits in effect to reduce risk of flood damages
 - ▶ River forecast includes radar detected precipitation and NWS forecasted precipitation



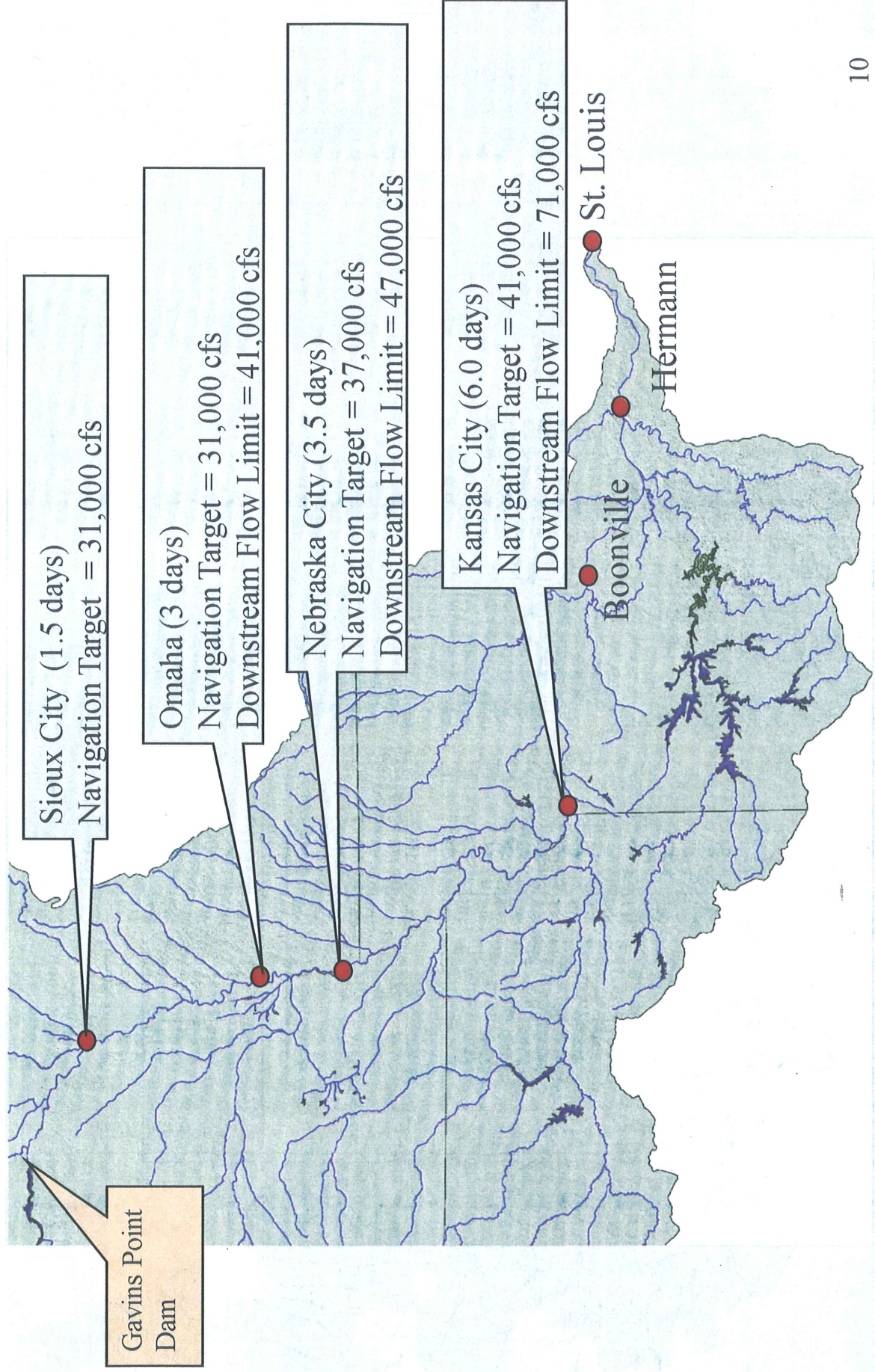
Gavins Point Releases



Navigation Targets* and Travel Times



Spring Pulse Downstream Flow Limits



Elimination of Pulses below Kansas City

- USFWS has indicated:
 - ▶ The Gavins Point spring pulses are most important in the reach from the dam to the mouth of the Platte River just downstream of Omaha, NE
 - ▶ Below the confluence of the Platte and Missouri Rivers natural pulses occur with sufficient frequency to meet the requirements of the pallid sturgeon



Elimination of Pulses below Kansas City

- Releases from Corps' tributary projects may be adjusted to reduce or eliminate the spring pulse
 - ▶ If significant releases are being made from Corps tributary projects
 - ▶ And, if a temporary reduction in releases would not cause undue increased risk to other areas



Spring Pulse History

2006 – 2008 Drought Period

- 2006
 - ▶ March spring pulse cancelled due to drought preclude
 - ▶ May spring pulse; peak magnitude of 9,000 cfs for 2 days
- 2007
 - ▶ Both spring pulses cancelled due to drought preclude
 - ▶ Natural pulses occurred out of the James River in March and May
- 2008
 - ▶ March spring pulse; peak magnitude of 4,500 cfs for 2 days
 - Pulse eliminated downstream of the Kansas River
 - ▶ May spring pulse cancelled due to drought preclude



Spring Pulse History

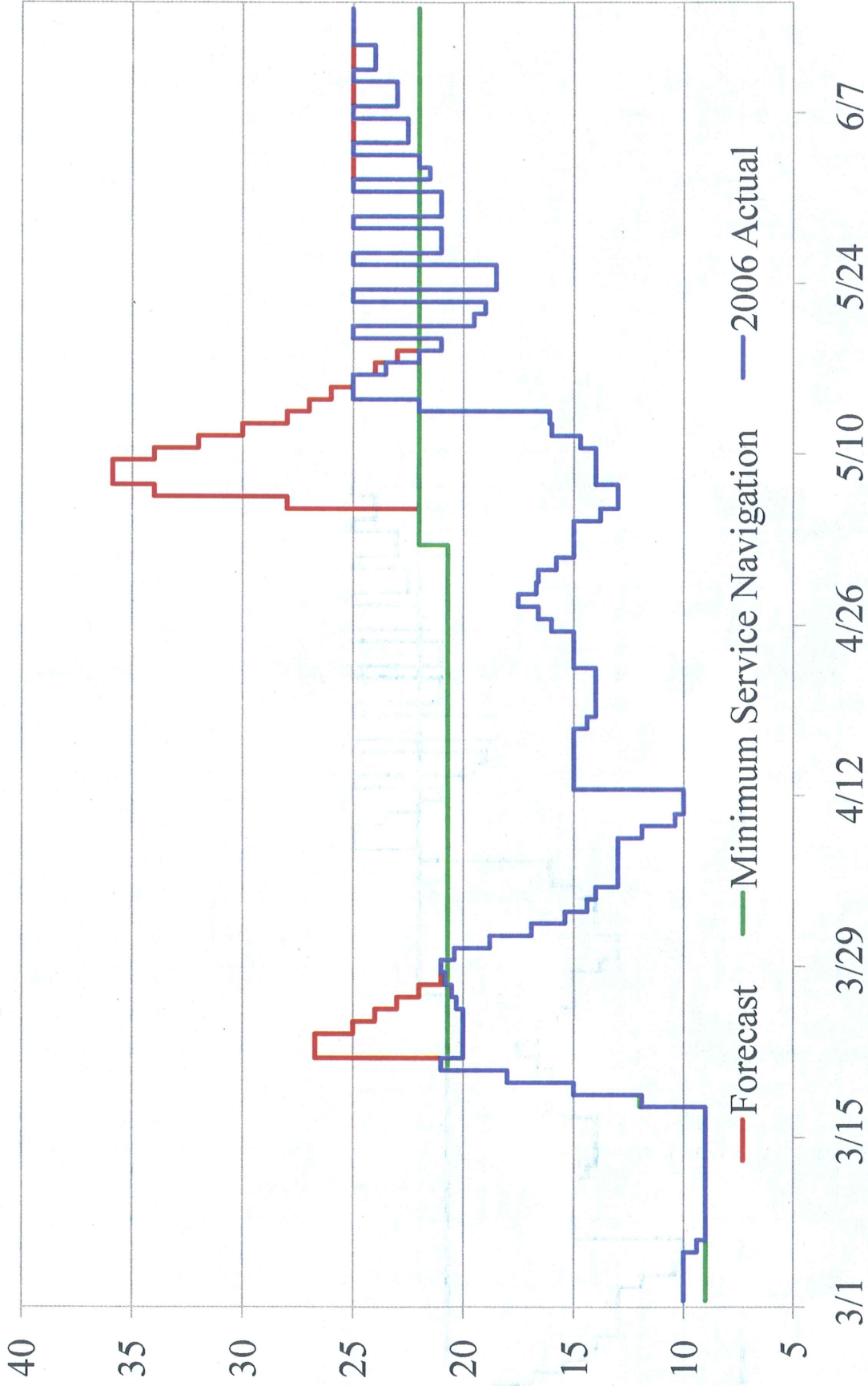
2009-2010 High Water Period

- 2009 – first potential bi-modal spring pulse
 - ▶ March spring pulse cancelled due to downstream flow limits
 - ▶ May spring pulse; peak magnitude of 6,000 cfs for 2 days
 - Pulse eliminated downstream of the Kansas River
- 2010 – potential bimodal spring pulse
 - ▶ March spring pulse cancelled due to downstream flow limits and flows in excess of 5,000 cfs on the James River
 - Natural March pulse occurred out of the James River
 - ▶ May spring pulse cancelled due to downstream flow limits and cold water temperatures



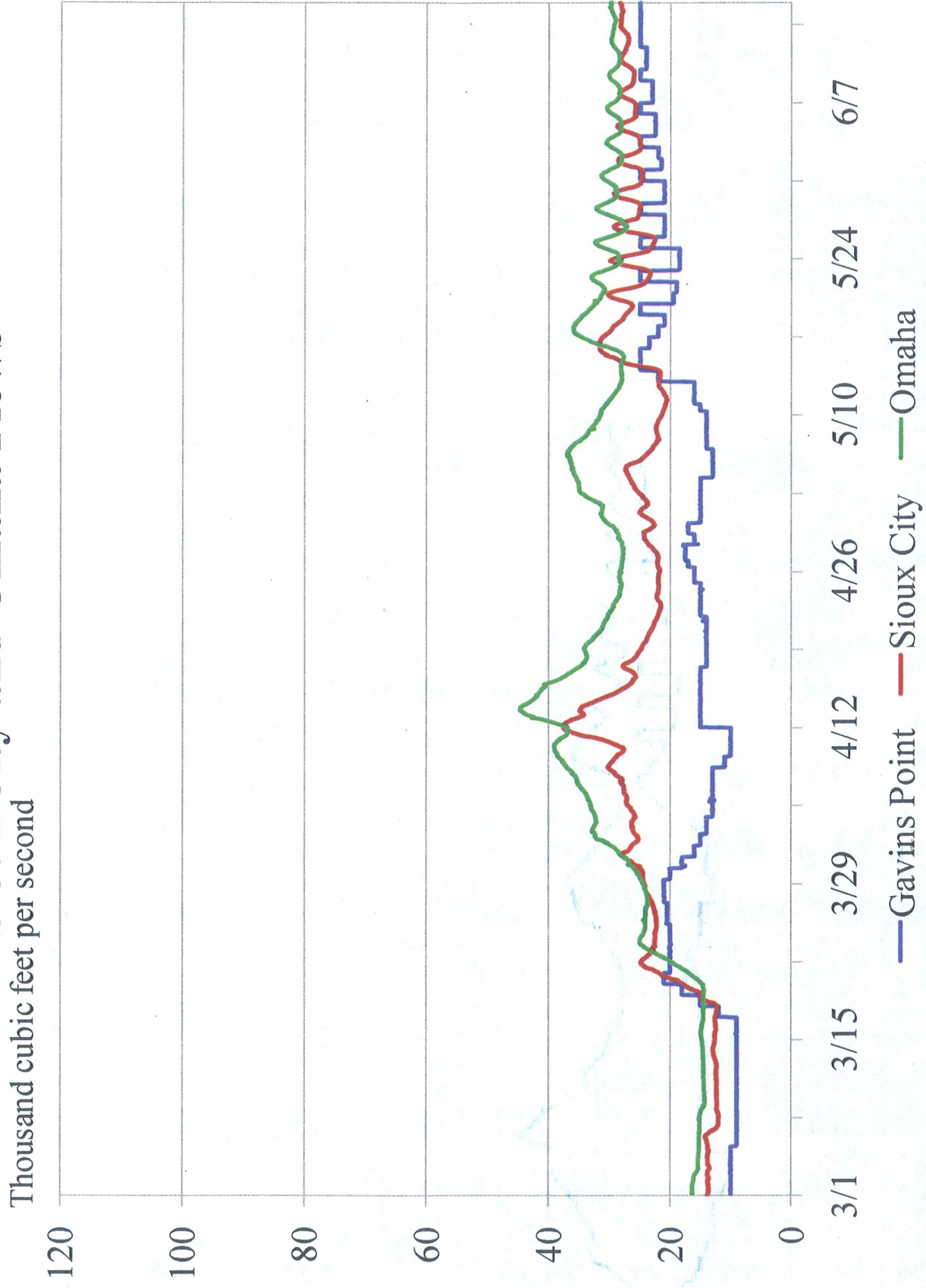
2006 Gavins Point Releases

Thousand cubic feet per second

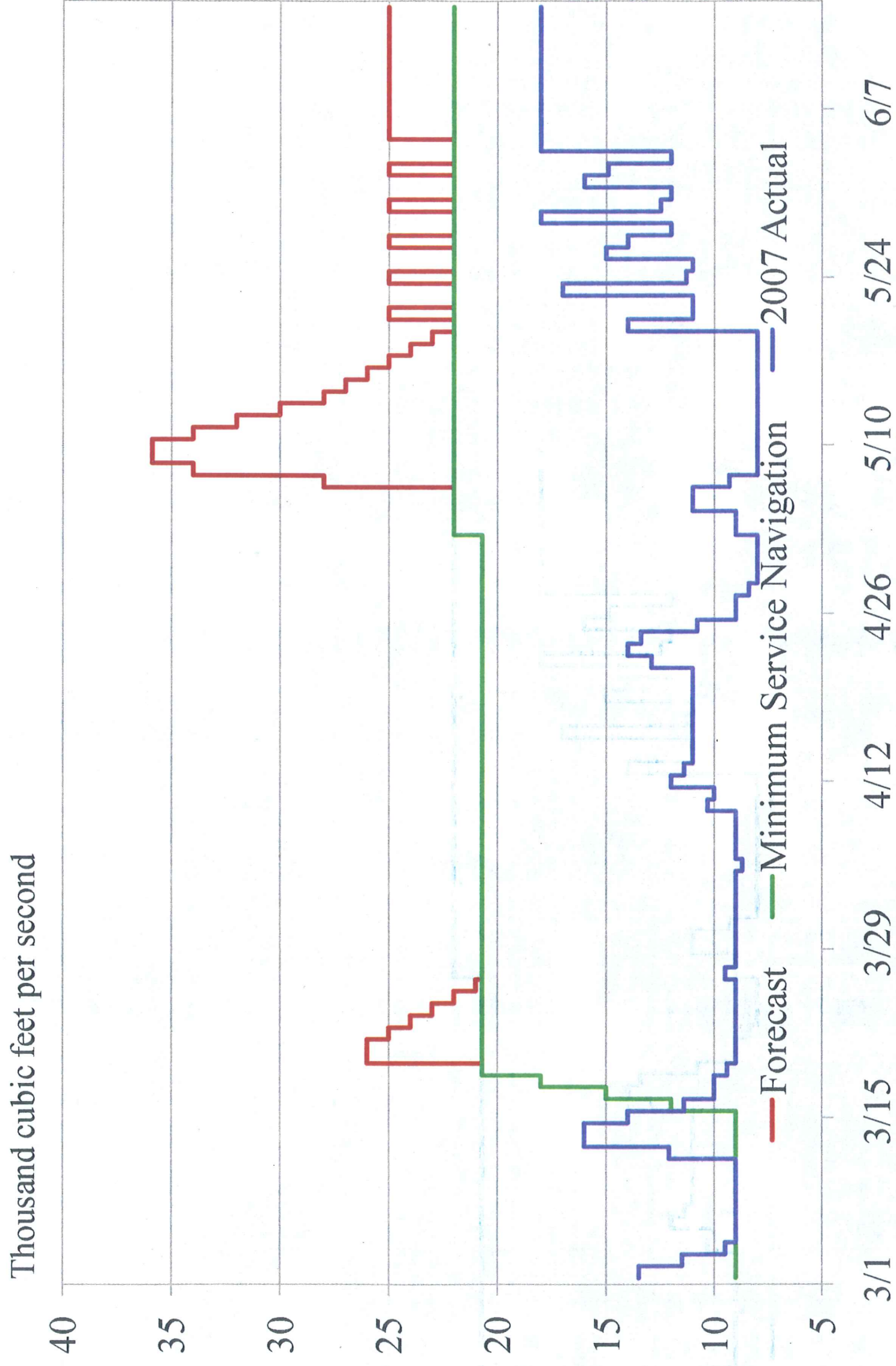


2006 Gavins Point Releases

Sioux City and Omaha Flows



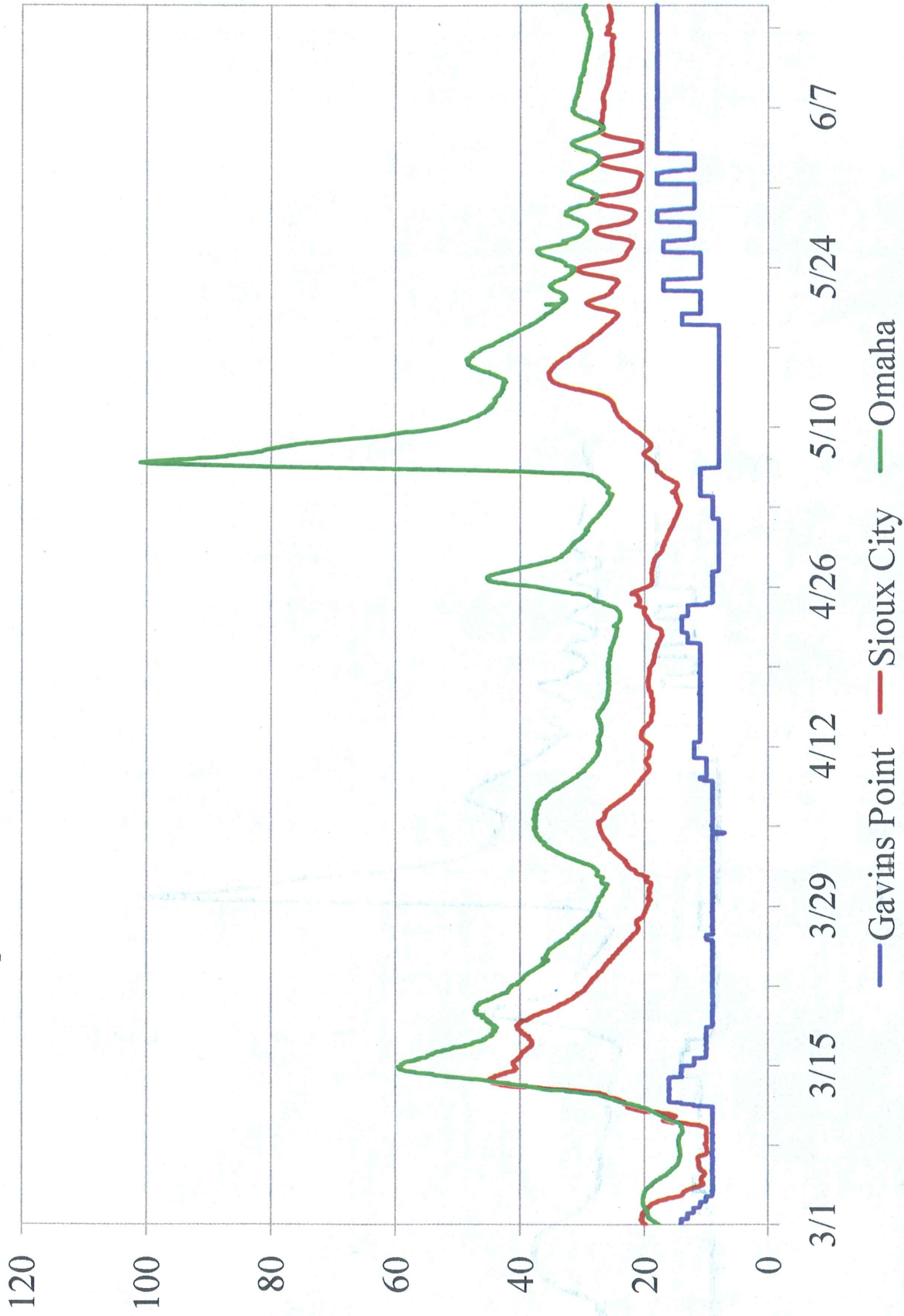
2007 Gavins Point Releases



2007 Gavins Point Releases

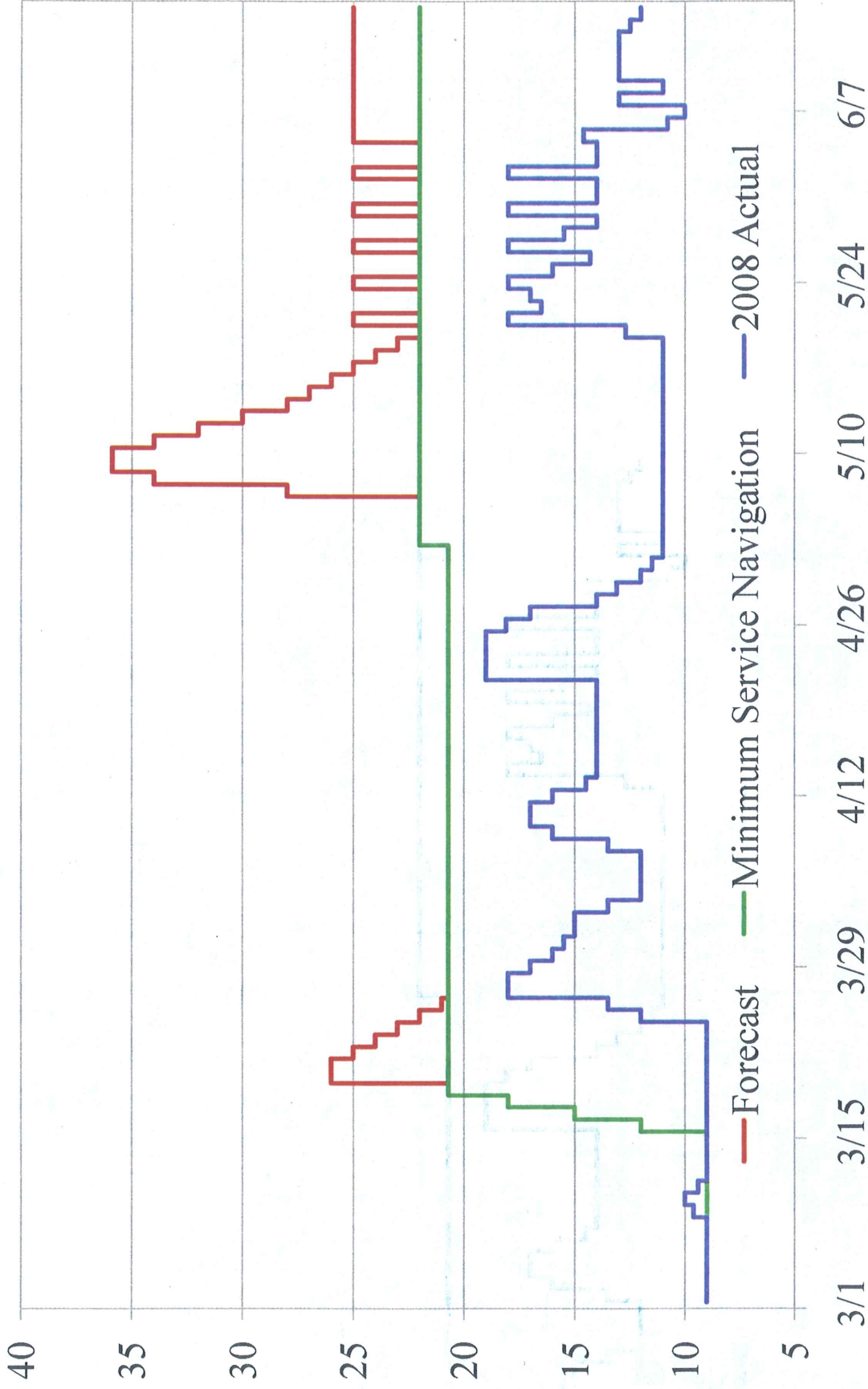
Sioux City and Omaha Flows

Thousand cubic feet per second



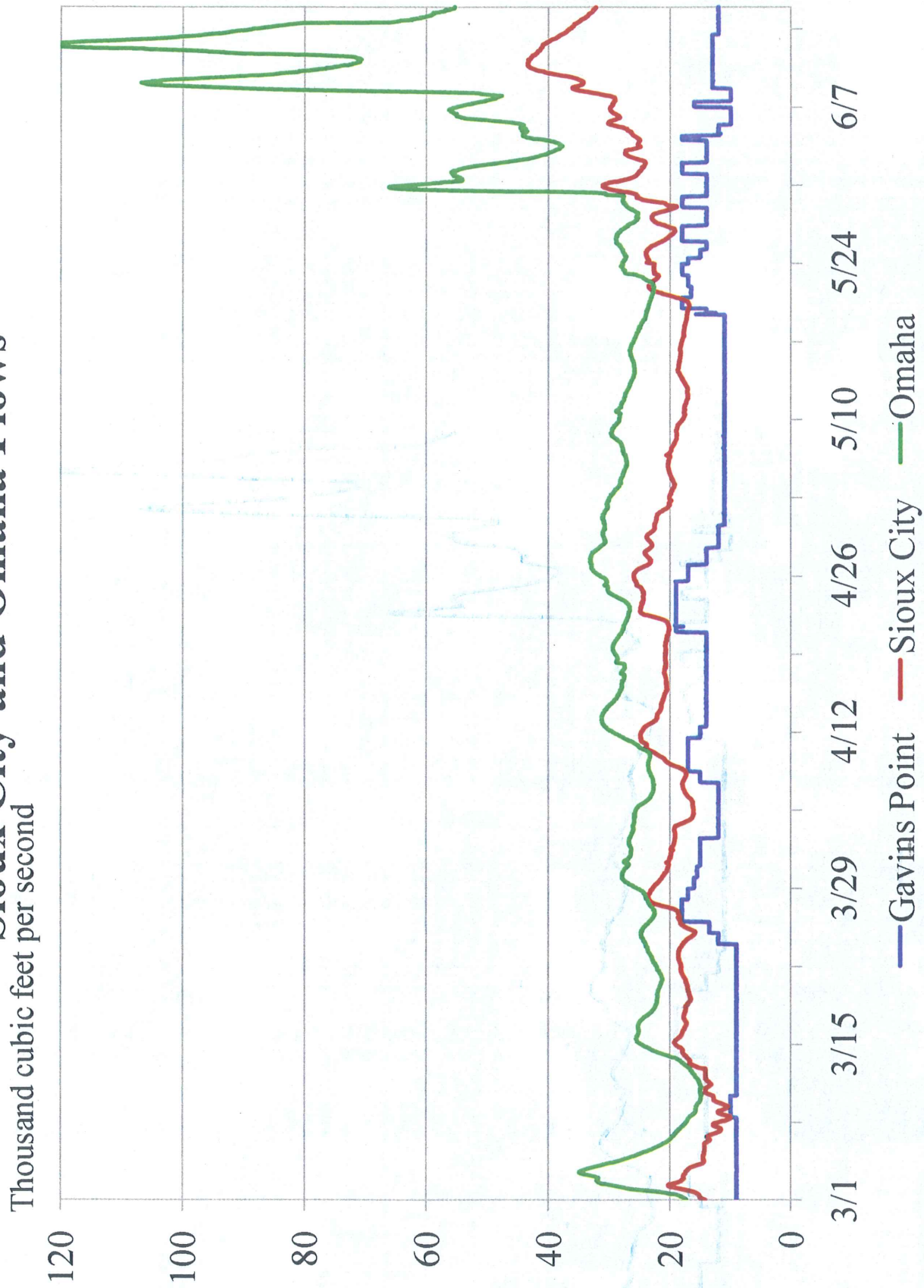
2008 Gavins Point Releases

Thousand cubic feet per second



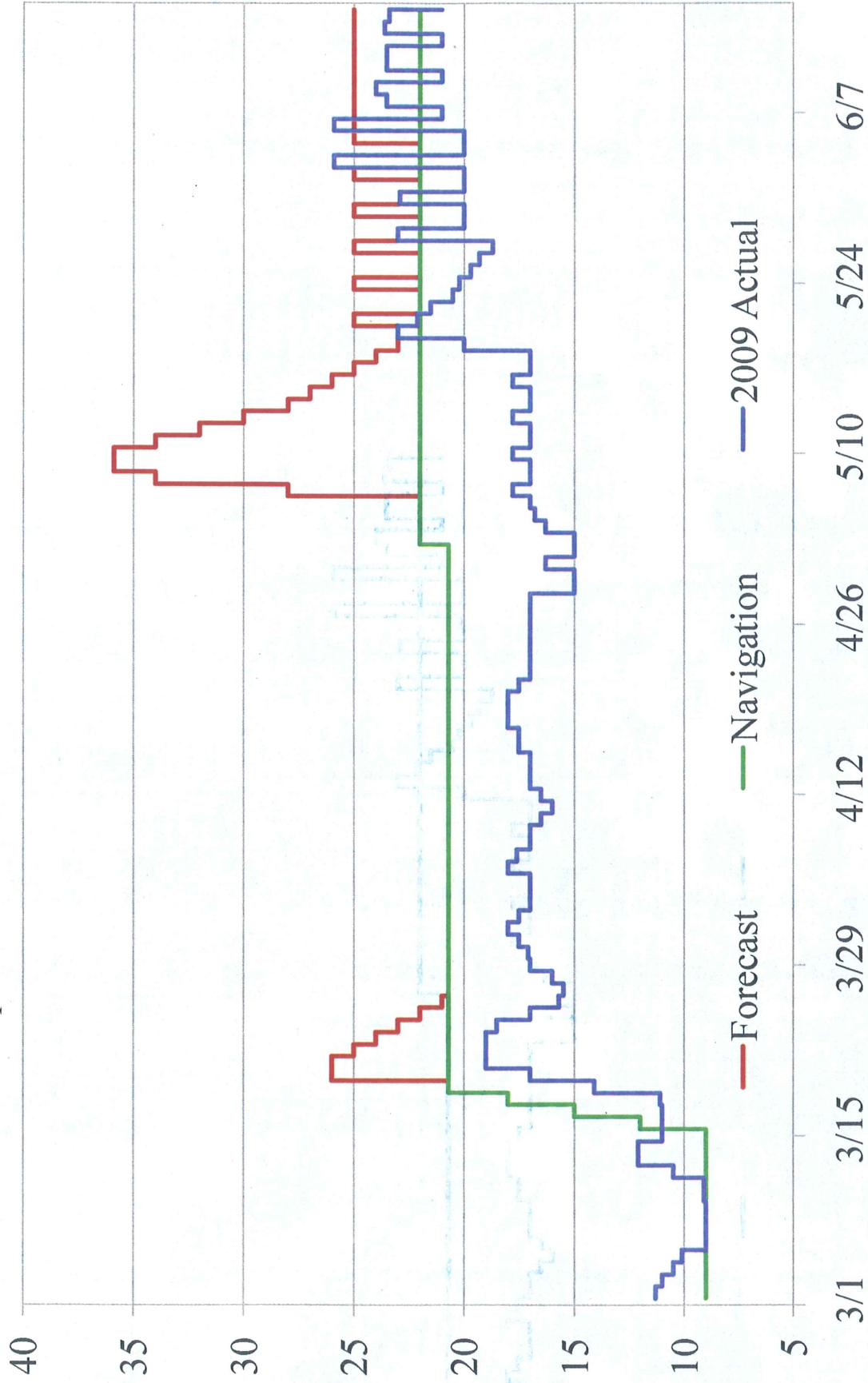
2008 Gavins Point Releases

Sioux City and Omaha Flows



2009 Gavins Point Releases

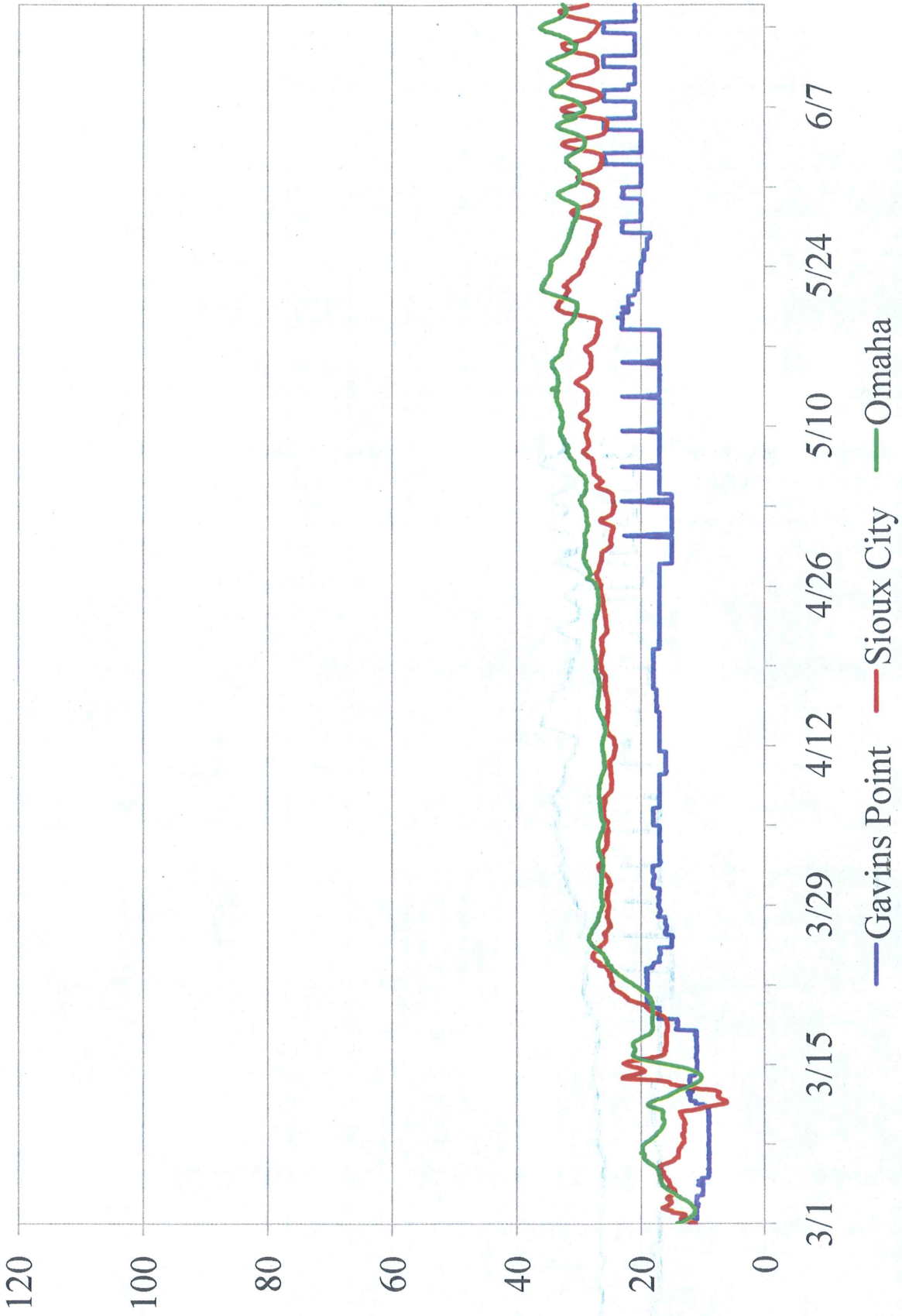
Thousand cubic feet per second



2009 Gavins Point Releases

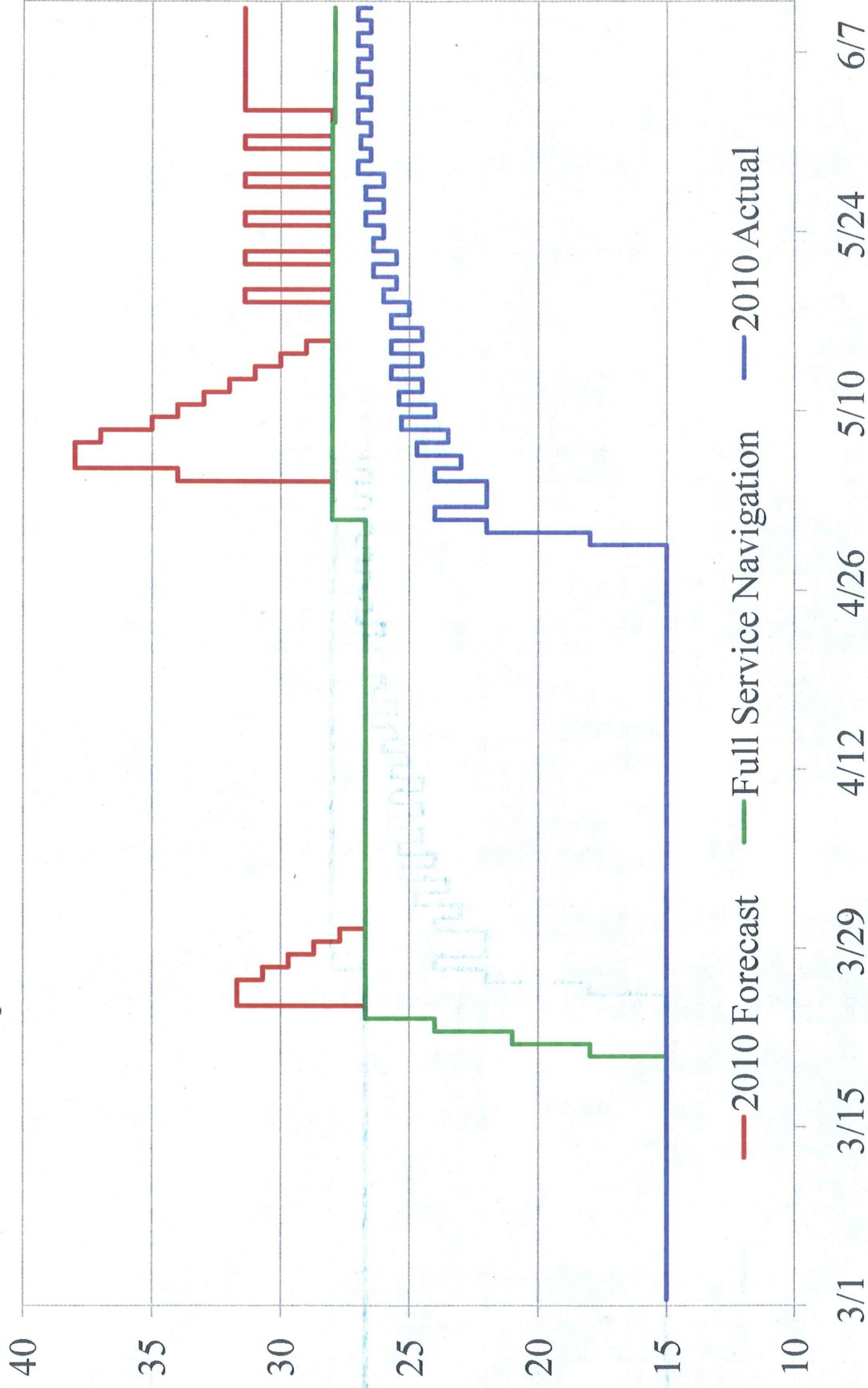
Sioux City and Omaha Flows

Thousand cubic feet per second



2010 Gavins Point Releases

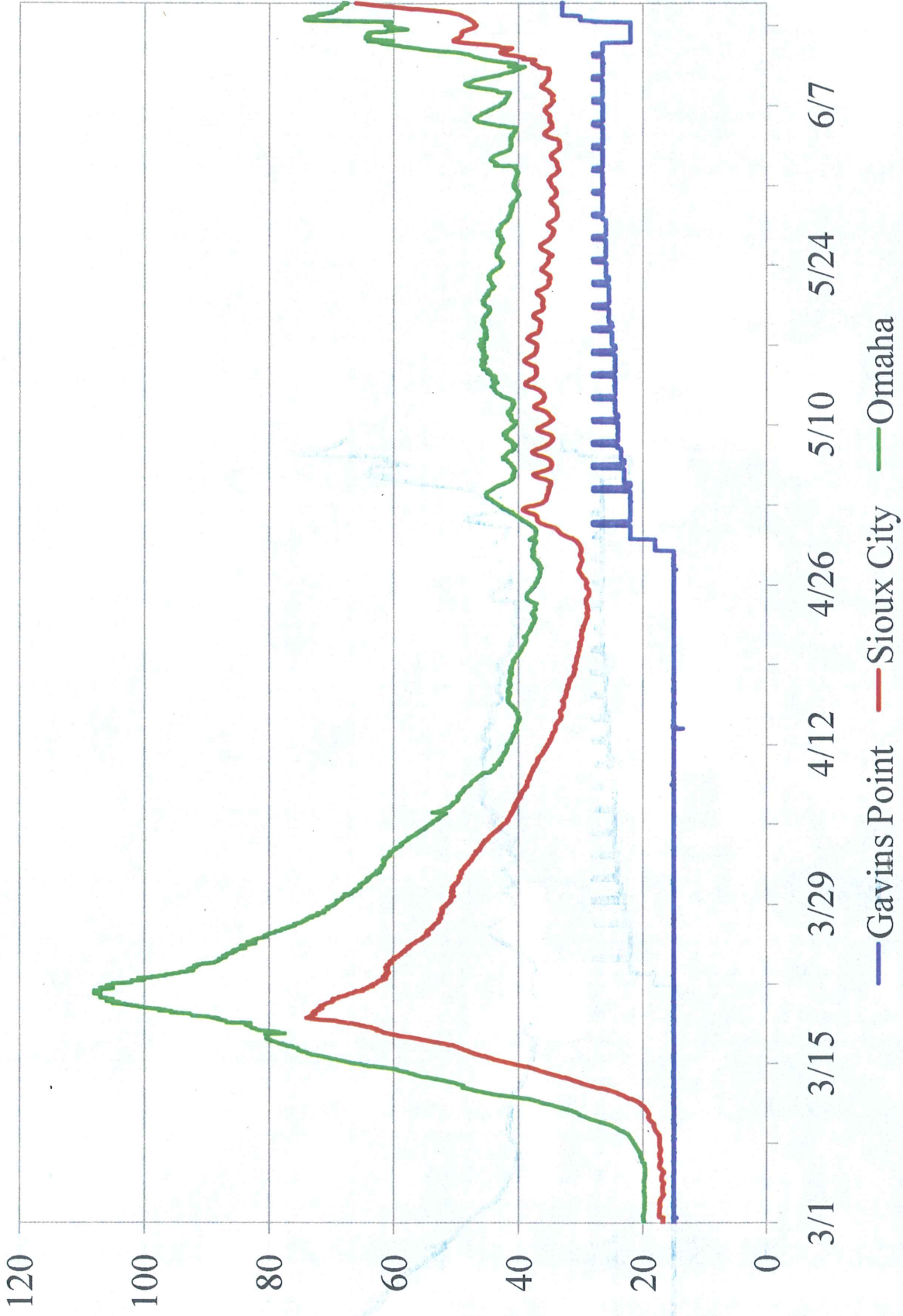
Thousand cubic feet per second



2010 Gavins Point Releases

Sioux City and Omaha Flows

Thousand cubic feet per second



Questions?

Jody Farhat, P.E.
402-996-3840 (Office)
jody.s.farhat@usace.army.mil



[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:42 AM
To: Farhat, Jody S NWD02
Cc: [REDACTED] NWD02
Subject: RE: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

You need to download HEC-DSSVue to your pc.

<http://www.hec.usace.army.mil/software/hec-dss/hecdssvue-download.htm>

Download it to your PC and John can install.

[REDACTED]

[REDACTED]
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE

[REDACTED]
[REDACTED] (fax)

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Thursday, March 24, 2011 9:17 AM
To: [REDACTED] NWD02
Subject: RE: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

I can't open the attachment

-----Original Message-----

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:12 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02
Cc: [REDACTED] NWD02
Subject: FW: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

FYSA. Some benefits from our snowmelt modeling efforts with CRREL. Kevin is sharing this information with the District.

[REDACTED]

Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE

[REDACTED]
[REDACTED] (fax)

-----Original Message-----

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:05 AM
To: [REDACTED] NWD02
Subject: FW: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

You should also see these model results. They include observed discharges up through this morning (24-Mar).

[REDACTED]

-----Original Message-----

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:01 AM
To: [REDACTED] NWO; [REDACTED] NWO
Subject: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

[REDACTED],

Earlier this week I updated the Big Sioux snowmelt model and have run forecasts the past three days. Yesterday afternoon I computed decent results for Sioux Falls at North Cliff, and I've attached them (both computed and observed) in a DSS file. The file also includes forecast results for Dell Rapids, below Watertown, Akron, and the Rock River at Rock Valley.

Later this morning I can send updated results for the James River in South Dakota.

[REDACTED]

[REDACTED]

USACE, Northwestern Division
Missouri Basin Water Management Division
402-996-3874

[REDACTED]@usace.army.mil

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

NWO

From: [REDACTED] NWK
Sent: Thursday, March 24, 2011 9:26 AM
To: Farhat, Jody S NWD02
Subject: FW: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

We received a query today from Paul Stewart with the Kansas Chief, a weekly newspaper serving Doniphan County. Can you assist in answering two of his questions?

3. Are the dams upriver holding back a large volume of water due to the winter snows? What is your projected release schedule for this spring and summer? Will it be a normal release, or more or less?

4. What affects the water levels in this area? How many dams are upstream? And once the water is released, what is the approximate time lapse before it is expected to reach this area?

Thanks for your help!

Diana McCoy
Public Affairs Specialist
U.S. Army Corps of Engineers
Kansas City District
(816) 389-3485: Office
(816) 812-5708: Cell

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"Like" us on Facebook! www.facebook.com/usace.kcd

-----Original Message-----

From: [REDACTED] NWK
Sent: Thursday, March 24, 2011 9:22 AM
To: McCoy, Diana NWK
Subject: RE: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Diana - I provided an answer for question 2, but I think John and Jody should have a shot at questions 1, 3-4. Let me know if you don't get a response and I can pursue -- thanks

1. What is the status of the Elwood-Gladden levee? After the '93 flood it was mandated that improvements be made. Has anything been done? If so, what to date? Is there a deadline for completion? Anything you can provide on this levee situation would be very helpful.

[REDACTED] can provide an answer on this one.

2. There have been recent reports of possible spring flooding in the Midwest. Does this involve a possible flooding situation along the Missouri River, and in particular, in the Doniphan County/St. Joseph, Missouri, area?

Flooding in the spring is always possible; however, National Weather Service forecasts at this point indicate that we are looking at just a normal chance for major/moderate flooding in and along the lower Missouri River (Rulo, NE to the mouth) through early June. Snowmelt will not be an influence in the lower Missouri River basin. The chance for flooding will be specifically tied to the amount of precipitation received. The current National Weather Service 90-day outlook can be found at http://www.crh.noaa.gov/mbrfc/?n=new_outlook

3. Are the dams upriver holding back a large volume of water due to the winter snows? What is your projected release schedule for this spring and summer? Will it be a normal release, or more or less?

4. What affects the water levels in this area? How many dams are upstream? And once the water is released, what is the approximate time lapse before it is expected to reach this area?

Jody Farhat is the best person to address for both the last 2 questions.

-----Original Message-----

From: McCoy, Diana NWK

Sent: Thursday, March 24, 2011 8:34 AM

To: [REDACTED] NWK

Subject: Query (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Jud,

We received a query today from Paul Stewart with the Kansas Chief weekly newspaper serving Doniphan County. Can you assist in answering these questions?

1. What is the status of the Elwood-Gladden levee? After the '93 flood it was mandated that improvements be made. Has anything been done? If so, what to date? Is there a deadline for completion? Anything you can provide on this levee situation would be very helpful.

2. There have been recent reports of possible spring flooding in the Midwest. Does this involve a possible flooding situation along the Missouri River, and in particular, in the Doniphan County/St. Joseph, Missouri, area?

3. Are the dams upriver holding back a large volume of water due to the winter snows? What is your projected release schedule for this spring and summer? Will it be a normal release, or more or less?

4. What affects the water levels in this area? How many dams are upstream? And once the water is released, what is the approximate time lapse before it is expected to reach this area?

Diana McCoy
Public Affairs Specialist

U.S. Army Corps of Engineers
Kansas City District
(816) 389-3485: Office
(816) 812-5708: Cell

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"Like" us on Facebook! www.facebook.com/usace.kcd

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: Stamm, Kevin D NWD02
Sent: Thursday, March 24, 2011 9:22 AM
To: [REDACTED] NWD02; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
[REDACTED] NWO
Cc: Farhat, Jody S NWD02; [REDACTED] NWD02
Subject: James River snowmelt forecast (UNCLASSIFIED)
Attachments: James_20110324.dss

Classification: UNCLASSIFIED
Caveats: NONE

Attached are the results from the James River model. The forecast is tracking very closely with the observed flow at Scotland. The model computes a peak discharge near 23,000 cfs on March 29. I will update the results using new forecast temperatures tomorrow.

[REDACTED]
[REDACTED]
USACE, Northwestern Division
Missouri Basin Water Management Division
[REDACTED]
[\[REDACTED\]@usace.army.mil](mailto:[REDACTED]@usace.army.mil)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:12 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD02
Cc: [REDACTED] NWD02
Subject: FW: Big Sioux forecast (UNCLASSIFIED)
Attachments: BigSioux_20110324.dss

Classification: UNCLASSIFIED
Caveats: NONE

FYSA. Some benefits from our snowmelt modeling efforts with CRREL. Kevin is sharing this information with the District.

[REDACTED]
Reservoir Regulation Team Lead
Missouri River Basin Water Management,
Northwestern Division, USACE
[REDACTED]

[REDACTED] (fax)

-----Original Message-----

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:05 AM
To: [REDACTED] NWD02
Subject: FW: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

You should also see these model results. They include observed discharges up through this morning (24-Mar).

[REDACTED]
-----Original Message-----

From: [REDACTED] NWD02
Sent: Thursday, March 24, 2011 9:01 AM
To: [REDACTED] NWO; [REDACTED] NWO
Subject: Big Sioux forecast (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED],
Earlier this week I updated the Big Sioux snowmelt model and have run forecasts the past three days. Yesterday afternoon I computed decent results for Sioux Falls at North Cliff, and I've attached them (both computed and observed) in a DSS file. The file also includes forecast results for Dell Rapids, below Watertown, Akron, and the Rock River at Rock Valley.

Later this morning I can send updated results for the James River in South Dakota.

[REDACTED]
USACE, Northwestern Division
Missouri Basin Water Management Division
[REDACTED]

[REDACTED]@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWD
Sent: Friday, March 25, 2011 7:14 PM
To: Farhat, Jody S NWD02
Cc: [REDACTED] NWD02; [REDACTED] NWD
Subject: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)
Attachments: Dir., Dept. of Nat. Resources-Gavins Point Dam_Mar. 25, 2011.pdf

Classification: UNCLASSIFIED

Caveats: FOUO

Good Afternoon,

Attached is the response letter to Ms. Sara Parker Pauley, Director, Dept. of Natural Resources, Missouri regarding the spring pulses from Gavins Point Dam. Also want to let you know that [REDACTED] had not been able to review it but BG McMahon said that was OK.

The original, to Ms. Sara Parker Pauley, will go out in Monday's mail.

I will mail you the yellow staffing sheet, if you'd like.

Best Regards,

[REDACTED]
Executive Secretary
U.S. Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, OR 97209
Ph: [REDACTED]

Attachment Classification: UNCLASSIFIED

Attachment Caveats: NONE

Classification: UNCLASSIFIED

Caveats: FOUO



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

MAR 25 2011

REPLY TO
ATTENTION OF

Missouri River Basin Water Management Division

Ms. Sara Parker Pauley
Director, Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Dear Ms. Pauley:

Thank you for your letter dated March 15, 2011, requesting that the Corps of Engineers (Corps) forego implementation of the spring pulses from Gavins Point Dam. As you may know, it appears unlikely that a March pulse will be implemented due to high flows on the James and Missouri Rivers. A decision regarding the May pulse will be made based on observed and forecasted river conditions at that time. The Corps takes its role very seriously in operating the Missouri River Reservoir System, and strives to provide an open and transparent decision making process for our vast array of stakeholders.

The Final 2011 Annual Operating Plan, made available to the public in mid-December 2010, presented the Corps' intent to implement a bimodal spring pulse (March and May) from Gavins Point Dam in 2011. The bimodal spring pulse is in compliance with the Master Manual and is required to comply with the Endangered Species Act (ESA) and the 2003 Amended Biological Opinion (BiOp).

Safeguards to minimize the risk of downstream flooding due to the spring pulses were included in the 2006 revision to the Master Manual. These safeguards are termed "downstream flow limits" and are well below the channel capacity of the Missouri River. These flow limits are identical to the most restrictive of the flood control constraints presented in the Master Manual. Additional safeguards have been added. Under the current Master Manual, the Corps incorporates observed and anticipated precipitation into the Corps' river forecast to provide greater assurance that flows will remain below the downstream flow limits during the duration of the spring pulses. The Corps also has the option of reducing or eliminating the effect of the spring pulses on river stages below Kansas City if significant releases are being made from Corps tributary projects and if a temporary reduction in those releases would not cause undue risk to other areas.

I appreciate your comments related to the scientific basis for the spring pulses and highlighting recent research showing that hours of sunlight and water temperature, rather than flow, are the most likely proximate cue to induce pallid sturgeon spawning. The Corps vigorously supports the ongoing integrated research, monitoring, and evaluation program to identify the factors that may be limiting pallid sturgeon spawning and recruitment in the Missouri River. This work is being conducted by and for the Corps as part of the Missouri River Recovery Program.

Although much has been learned about the spring pulse and the pallid sturgeon during the previous several years, many uncertainties remain. To that end, an Independent Science Advisory Panel (ISAP) was established in January 2011 in partnership with the Missouri River Recovery Implementation Committee (MRRIC). The panel is comprised of six science advisors who will provide independent science support and technical oversight on specific topics. The initial topic selected for the ISAP is "Missouri River Spring Pulse and Adaptive Management".

The ISAP will review and provide recommendations to the Corps, U.S. Fish and Wildlife Service and the MRRIC on the expected outcomes of the Gavins Point Dam spring pulses. The panel will also review the metrics, monitoring, investigations and management actions, and provide recommendations on their potential refinement. The scope of the review includes:

- Examine the goals and objectives of the spring pulses
- Recommend metrics to assess the spring pulses
- Identify ecological uncertainties and risk
- Identify changes, modifications or additions to monitoring program
- Identify focused investigations/research needs
- Recommend data analysis and assessment methods
- Examine potential management actions to evaluate as part of an Adaptive Management Program

The final ISAP report is scheduled for release in September 2011. The outcome of this scientific review will be used to develop an adaptive management plan for the Gavins Point Dam spring pulses to guide future changes to the research, monitoring and evaluation program and management actions.

The Corps continues to believe that the current Master Manual provides the appropriate balance of benefits to all authorized project purposes, fulfills our treaty and trust obligations to the basin Tribes, and complies with all Federal law, including the ESA.

I understand the importance of the Missouri River to citizens in the State of Missouri and appreciate your commitment to raise these issues on their behalf. If you or your staff has any questions, please feel free to contact me at (503) 808-3700, or Ms. Jody Farhat, Chief of Missouri River Basin Water Management Division, at (402) 996-3840.

Sincerely,

A handwritten signature in black ink, appearing to read "John R. McMahon", with a stylized flourish at the end.

John R. McMahon
Brigadier General, US Army
Division Commander

NWO

From: Farhat, Jody S NWD02
Sent: Friday, March 25, 2011 12:47 PM
To: Farhat, Jody S NWD02; aaron_popelka@moran.senate.gov; Adams, Steve; alan.feyerherm@mail.house.gov; Anderson, G Witt NWD; ansley.mick@mail.house.gov; [REDACTED] NWD; [REDACTED] NWO; Blechinger, Erik T NWO; brian_klippenstein@blunt.senate.gov; brianne_dugan@baucus.senate.gov; Bryggman, Tim; Casteel, Kelly D.; chad.ramey@mail.house.gov; Charlie Scott; chrisbrown@mail.house.gov; christina.mahoney@mail.house.gov; Cindy_Hall@mccaskill.senate.gov; colin.brainard@mail.house.gov; [REDACTED] NWK; corey_dukes@mccaskill.senate.gov; d_schwietert@thune.senate.gov; Dan.Engemann@mail.house.gov; darwin.curls@mail.house.gov; dayle_williamson@bennelson.senate.gov; Dean.Mathisen@mail.house.gov; deb.vanmatre@mail.house.gov; [REDACTED] NWD02; don_canton@hoeven.senate.gov; [REDACTED] NWO; edwin.elfmann@mail.house.gov; Engelhardt, Bruce W.; eric.bierwagen@mail.house.gov; eric.bohl@mail.house.gov; erick_lutt@bennelson.senate.gov; Farmer, Monique L NWO; [REDACTED] NWK; [REDACTED] HQ; Garland.Erbele@state.sd.us; gary.marble@mail.house.gov; Gaul, Steve; [REDACTED] NWK; [REDACTED] HQ02; [REDACTED] NWD02; [REDACTED] NWD02; harold_stones@roberts.senate.gov; Henry Maddux; Hofmann, Anthony J COL NWK; [REDACTED] NWK; janna.worsham@mail.house.gov; Jenny Frazier; [REDACTED] MVS External Stakeholder; Jim.Riis@state.sd.us; John Drew; Karen Rouse; ken.kopocis@mail.house.gov; [REDACTED] NWK; [REDACTED] NWD02; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWD02; Mark.Rath@state.sd.us; marty_boeckel@conrad.senate.gov; [REDACTED] NWO; McMahon, John R BG NWD; melissa.roe@mail.house.gov; mike.hayden@outdoors.com; mike.matousek@mail.house.gov; nathan_taylor@tester.senate.gov; nathan_vanderplaats@harkin.senate.gov; nichole_distefano@mccaskill.senate.gov; patrick.carroll@mail.house.gov; patrick_lehman@johanns.senate.gov; [REDACTED] NWO; [REDACTED] NWK; peter_henry@blunt.senate.gov; phil_erdman@johanns.senate.gov; [REDACTED] NWD; randy.vogel@mail.house.gov; [REDACTED] NWO; richard.henkle@mail.house.gov; richard_bender@harkin.senate.gov; Ruch, Robert J COL NWO; ryan_flickner@roberts.senate.gov; Schenk, Kathryn M NWO; scott.corrie@mail.house.gov; [REDACTED] NWD; shane_goettle@hoeven.senate.gov; sharon_boysen@johnson.senate.gov; sherry_kuntz@grassley.senate.gov; [REDACTED] NWK; [REDACTED] HQDA; [REDACTED] NWD02; Stephen Guertin; stephenne_harding@tester.senate.gov; [REDACTED] NWO; [REDACTED] NWD02; [REDACTED] NWO; Todd Sando; tracee_sutton@conrad.senate.gov; Tracy Streeter; wayne.brincks@mail.house.gov; Wayne_NelsonStastny@fws.gov; [REDACTED] MVS External Stakeholder; Westrup, Nathan; zach_nelson@bennelson.senate.gov
Subject: RE: Gavins Point March Spring Pulse Update (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

All - the March spring pulse from Gavins Point dam remains on hold due to high flows on the James River in eastern South Dakota, and flows on the Missouri River in excess of the downstream flow limits at Omaha and Nebraska City.

The status of the March pulse is not expected to change over the next several days; a press release cancelling the pulse is planned for Monday, March 28 unless conditions change dramatically over the weekend, which is very unlikely.

Each day a PowerPoint presentation documenting our decision making process will be posted on our website at: <http://www.nwd-mr.usace.army.mil/rcc/>

Call or email if you have questions.

Regards,
Jody

Jody Farhat, P.E.
Chief, Missouri River Basin Water Management

jody.s.farhat@usace.army.mil
Office: 402-996-3840

Classification: UNCLASSIFIED
Caveats: NONE

NWO

From: Wingert, Kevin M NWO
Sent: Monday, March 28, 2011 1:49 PM
To: Farhat, Jody S NWD02
Subject: FW: Corps cancels March pulse as James and Missouri Rivers too high (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

Sent 1:45 p.m. Monday, March 28, 2011. Will follow up with basic statistics this afternoon.

VR,

Kevin Wingert

Public Affairs Specialist

U.S. Army Corps of Engineers Omaha District

Office: 402-995-2418

Cell: 402-779-1459

www.nwo.usace.army.mil

From: U.S. Army Corps of Engineers [<mailto:kevin.m.wingert@usace.army.mil>]
Sent: Monday, March 28, 2011 1:47 PM
To: Wingert, Kevin M NWO
Subject: Corps cancels March pulse as James and Missouri Rivers too high

http://us.vocuspr.com/Publish/520028/vcsPRAsset_520028_348656_c5220867-6ce9-45c0-83c2-dfd9e54e58a1_0_USACE_LOGO_small.jpg

For Immediate Release: March 28, 2011

Contact: Kevin Wingert 402-995-2418
Kevin.M.Wingert@usace.army.mil

Jody Farhat 402-996-3840
Jody.S.Farhat@usace.army.mil

Corps cancels March pulse as James and Missouri Rivers too high

Omaha, Neb. - The scheduled pulse of water into the Missouri River for this month to benefit the endangered pallid sturgeon has been canceled. A natural pulse from the eastern South Dakota tributaries is occurring instead.

The melt of the extensive plains snowpack in eastern South Dakota has raised river levels well above the flow limits, eliminating the need for a two-day pulse.

Tributary streams in eastern South Dakota are well above flood stage and are forecast to remain high for the next several weeks. The magnitude of the March pulse was to be 5,000 cubic feet per second (cfs) minus the flow on the James River at just above its confluence with the Missouri River upstream of Sioux City.

Today's flow on the James River is nearly 25,000 cfs. It is expected to crest later this week, but remain high for the foreseeable future.

The Missouri River is above the downstream flow limits at all three locations: Omaha, Nebraska City and Kansas City.

"The downstream flow limits are safeguards to reduce or eliminate the pulse to ensure that it does not cause flooding of agricultural land along the river," said Jody Farhat, Chief of the Water Management office here. "The stream gauge information we are receiving coupled with forecasts from the National Weather Service indicate that our most prudent action is to eliminate the pulse in March."

A pulse is also scheduled to be conducted in May. River conditions will be evaluated after May 1 to make a determination on the feasibility and timing of the pulse.

###

Classification: UNCLASSIFIED

Caveats: NONE

NWO

From: [REDACTED] NWD
Sent: Tuesday, March 29, 2011 1:08 PM
To: [REDACTED] NWO; [REDACTED] NWK
Cc: [REDACTED] NWP; [REDACTED] NWD; [REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWS; [REDACTED] NWP; [REDACTED] NWO; [REDACTED] NWS; [REDACTED] NWW; [REDACTED] NWP; [REDACTED] NWK; [REDACTED] NWP; [REDACTED] NWO; [REDACTED] NWD02; [REDACTED] ACE-IT@NWW; [REDACTED] NWP; [REDACTED] NWS; [REDACTED] NWW; [REDACTED] NWD; Bird, Brad A NWD; Farhat, Jody S NWD02; Barton, [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWS; [REDACTED] NWP; [REDACTED] NWW; Bertino, John J Jr NWO; [REDACTED] NWK
Subject: FW: 2011 Midwest Flood Imagery Request (UNCLASSIFIED)
Attachments: 2011_Flood_Imagery_Request.docx; CEddd_2011_Flood_Imagery_Request_dd-mmm-yyyy.rename_to_zip

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED]

Please discuss with your EM office and provide any relevant shapefiles that meet the intent stated below. Shapefiles should be sent to Steve Newman (CRREL) by 1 April (Friday).

Please cc: me on anything you submit.

Thanks,
[REDACTED]

P.S. I've coordinated with [REDACTED] and he will inform the EM chain that this is coming.

-----Original Message-----

From: [REDACTED] HQ02
Sent: Tuesday, March 29, 2011 10:47 AM
To: DLL-HQ-CECW-DEM; [REDACTED] LRDR; [REDACTED] SPD; [REDACTED] SAD; [REDACTED] MVD; [REDACTED] SWD; [REDACTED] SAD; [REDACTED] NWD; [REDACTED] NAD; [REDACTED] MVK; [REDACTED] M@ POD
Cc: [REDACTED] ERDC-CRREL-NH; Newman, Stephen ERDC-CRREL-NH
Subject: 2011 Midwest Flood Imagery Request (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All,

We have a request from DHS and FEMA to submit Areas of Interest (AOI's) for 2011 Midwest Flood imagery acquisition. We are being asked to identify areas where we expect flooding based on historical or local information. This information will be integrated with other Federal and State requirements in an effort to reduce redundancy, eliminate requests outside of potential flood areas, and to realize overall cost savings. Post-flooding, we will request products and write-ups of how imagery was used to help justify future acquisitions.

Please forward requests to District offices (specific directions are in the attachment). Questions and submittals should be sent to Steve Newman or Kevin Carlock at ERDC-CREEL by 1 April. This request should be coordinated through the Geospatial and EM communities at District and Division.

I realize this is a short suspense and I appreciate the effort. Thanks.

[REDACTED]

[REDACTED]

USACE Geospatial Coordinator

[REDACTED]@usace.army.mil

[REDACTED]

([REDACTED]) (fax)

Classification: UNCLASSIFIED

Caveats: NONE

Attachment Classification: UNCLASSIFIED

Attachment Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: NONE

2011 Flood Imagery Request

DHS and FEMA, in an effort to reduce redundancy and overall costs of imagery acquisition, are requesting Areas of Interest (AOI) for potential spring flooding. The Corps of Engineers will submit a request showing those AOIs restricted to locations likely to flood or with the potential to flood. (Figure 1 is an example of the AOIs submitted by MVP). This request will be combined with AOIs submitted by other federal, state, and local partners to better determine overall requirements. If an AOI Shapefile is not returned, it will be assumed the district has no imagery requirements this flood season.

To submit your AOI, please use the Shapefile attached to the e-mail requesting your AOI.

- 1) Digitize those areas (polygon) along rivers within your district that are in flood, likely to flood in the near term, or have the potential to flood based on National Weather Service forecasts or historical events.
- 2) Populate the attributes:
Priority (Optional)
River_Name (Required)
Comments (Optional)
- 3) Rename the Shapefile. (e.g., rename with the district identifier and date of submission)
CEddd_2011_Flood_Imagery_Request_dd-mmm-yyyy.shp

CEMVP_2011_Flood_Imagery_Request_29-MAR-2011.shp
- 4) Return the Shapefile by April 1 via e-mail to:
Steve Newman
Physical Scientist
ERDC-CRREL Remote Sensing / GIS Center
Stephen.D.Newman@usace.army.mil

If you have any questions, please contact:

Steve Newman - ERDC-CRREL Remote Sensing / GIS Center
Stephen.D.Newman@usace.army.mil
603-646-4372

Kevin Carlock - ERDC-CRREL Remote Sensing / GIS Center
Kevin.E.Carlock@usace.army.mil
309-738-1319

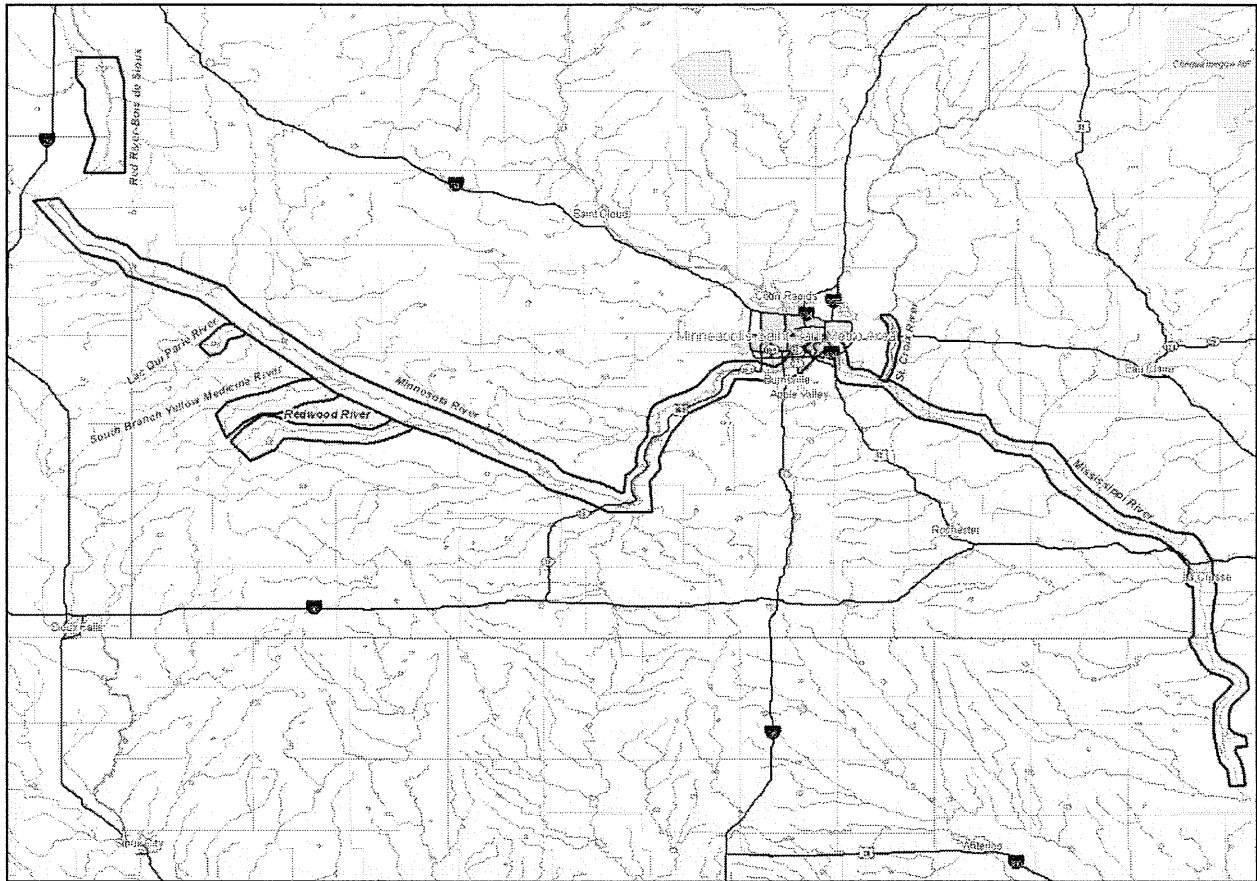


Figure 1: Imagery_Request_Example_AOIs

[REDACTED] NWO

From: [REDACTED] NWD
Sent: Tuesday, March 29, 2011 1:02 PM
To: [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD;
Farhat, Jody S NWD02
Cc: [REDACTED] NWD
Subject: Re: 2011 Midwest Flood Imagery Request (UNCLASSIFIED)

I would say please get to work on it. But we need to include/colloborate with EM folks.
Please send to GIS and I will connect EM personnel with GIS when I get into the office later today.

Message sent via my BlackBerry Wireless Device

----- Original Message -----

From: [REDACTED] NWD
To: [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD;
Farhat, Jody S NWD02
Cc: [REDACTED] NWD
Sent: Tue Mar 29 12:57:33 2011
Subject: FW: 2011 Midwest Flood Imagery Request (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Team,

Got this request through eGIS channels. It is a data call from GIS shapefiles for areas that we expect flooding based on historical or local info.

I'd like to know if this is OK for me to send to the District GIS folks, or is there a more appropriate way to handle this.

Suspense is Friday, so I need to send this asap.

Please let me know if you have any comments or input as to how we handle this.

Thanks,
[REDACTED]

-----Original Message-----

From: [REDACTED] HQ02
Sent: Tuesday, March 29, 2011 10:47 AM
To: DLL-HQ-CECW-DEM; [REDACTED] LRDOR; [REDACTED] SPD; [REDACTED]
SAD; [REDACTED] MVD; [REDACTED] SWD; [REDACTED] SAD; [REDACTED] NWD;
[REDACTED] NAD; [REDACTED] MVK; [REDACTED]@ POD
Cc: [REDACTED] ERDC-CRREL-NH; [REDACTED] ERDC-CRREL-NH
Subject: 2011 Midwest Flood Imagery Request (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

All,

We have a request from DHS and FEMA to submit Areas of Interest (AOI's) for 2011 Midwest Flood imagery acquisition. We are being asked to identify areas where we expect flooding based on historical or local information. This information will be integrated with other Federal and State requirements in an effort to reduce redundancy, eliminate requests outside of potential flood areas, and to realize overall cost savings. Post-flooding, we will request products and write-ups of how imagery was used to help justify future acquisitions.

Please forward requests to District offices (specific directions are in the attachment). Questions and submittals should be sent to Steve Newman or Kevin Carlock at ERDC-CREEL by 1 April. This request should be coordinated through the Geospatial and EM communities at District and Division.

I realize this is a short suspense and I appreciate the effort. Thanks.

[REDACTED]

[REDACTED]

USACE Geospatial Coordinator

nancy.j.blyler@usace.army.mil

[REDACTED]

[REDACTED] (fax)

Classification: UNCLASSIFIED

Caveats: NONE

Attachment Classification: UNCLASSIFIED

Attachment Caveats: FOUO

Classification: UNCLASSIFIED

Caveats: NONE

2011 Flood Imagery Request

DHS and FEMA, in an effort to reduce redundancy and overall costs of imagery acquisition, are requesting Areas of Interest (AOI) for potential spring flooding. The Corps of Engineers will submit a request showing those AOIs restricted to locations likely to flood or with the potential to flood. (Figure 1 is an example of the AOIs submitted by MVP). This request will be combined with AOIs submitted by other federal, state, and local partners to better determine overall requirements. If an AOI Shapefile is not returned, it will be assumed the district has no imagery requirements this flood season.

To submit your AOI, please use the Shapefile attached to the e-mail requesting your AOI.

- 1) Digitize those areas (polygon) along rivers within your district that are in flood, likely to flood in the near term, or have the potential to flood based on National Weather Service forecasts or historical events.
- 2) Populate the attributes:
Priority (Optional)
River_Name (Required)
Comments (Optional)
- 3) Rename the Shapefile. (e.g., rename with the district identifier and date of submission)
CEddd_2011_Flood_Imagery_Request_dd-mmm-yyyy.shp

CEMVP_2011_Flood_Imagery_Request_29-MAR-2011.shp
- 4) Return the Shapefile by April 1 via e-mail to:
Steve Newman
Physical Scientist
ERDC-CRREL Remote Sensing / GIS Center
Stephen.D.Newman@usace.army.mil

If you have any questions, please contact:

Steve Newman - ERDC-CRREL Remote Sensing / GIS Center
Stephen.D.Newman@usace.army.mil
603-646-4372

Kevin Carlock - ERDC-CRREL Remote Sensing / GIS Center
Kevin.E.Carlock@usace.army.mil
309-738-1319

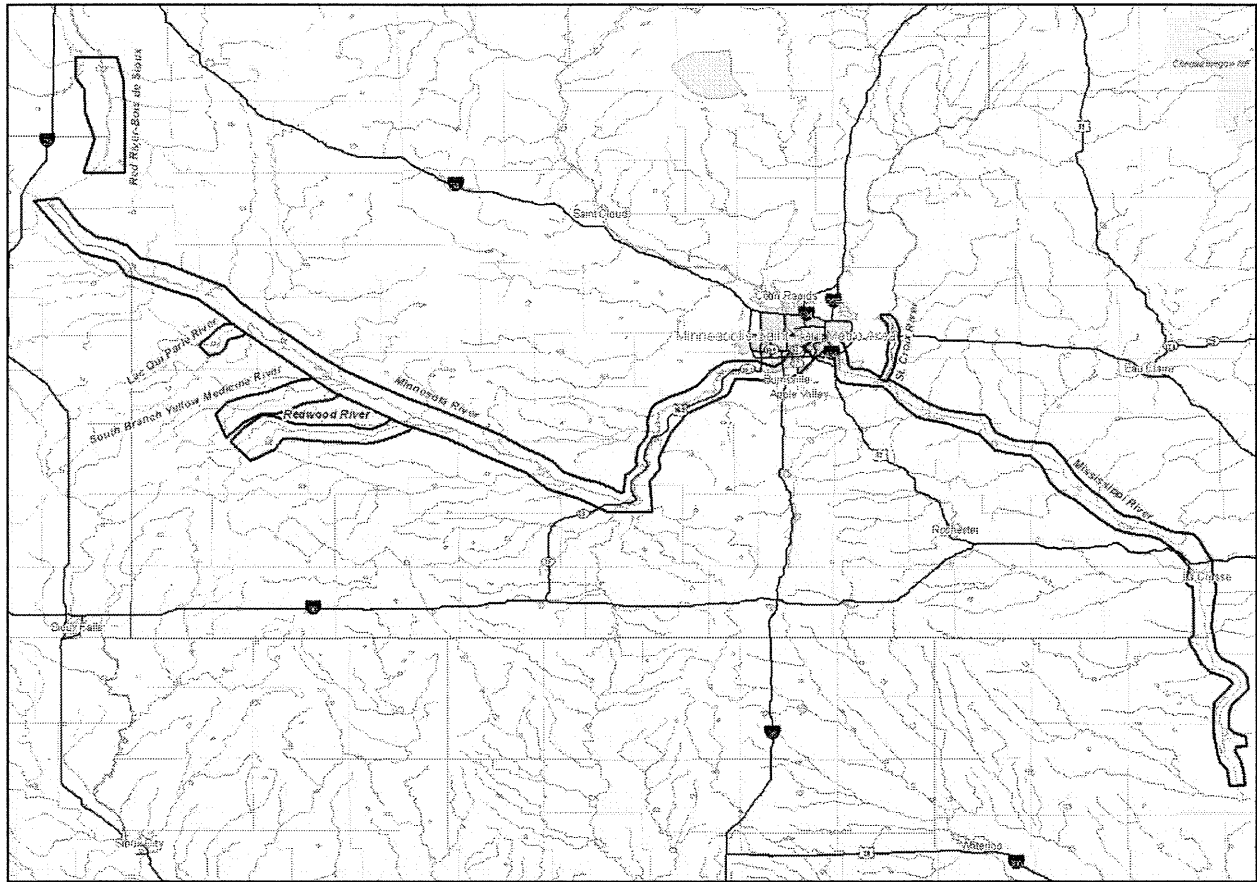


Figure 1: Imagery_Request_Example_AOIs

[REDACTED] NWO

From: [REDACTED] NWD
Sent: Tuesday, March 29, 2011 12:41 PM
To: Farhat, Jody S NWD02
Cc: [REDACTED] NWD
Subject: FW: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)
Attachments: Dir., Dept. of Nat. Resources-Gavins Point Dam_Mar. 25, 2011.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Hi Jody,

Out of curiosity, when you get a minute could you send me a copy of the letter Ms Pauley sent about the spring pulse?

Thanks & hope all is well!

[REDACTED]

-----Original Message-----

From: [REDACTED] NWD
Sent: Tuesday, March 29, 2011 9:16 AM
To: [REDACTED] NWD; [REDACTED] NWD
Subject: FW: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----

From: [REDACTED] NWD
Sent: Friday, March 25, 2011 5:14 PM
To: Farhat, Jody S NWD02
Cc: [REDACTED] A NWD02; [REDACTED] NWD
Subject: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Good Afternoon,

Attached is the response letter to Ms. Sara Parker Pauley, Director, Dept. of Natural Resources, Missouri regarding the spring pulses from Gavins Point Dam. Also want to let you know that [REDACTED] had not been able to review it but BG McMahon said that was OK.

The original, to Ms. Sara Parker Pauley, will go out in Monday's mail.

I will mail you the yellow staffing sheet, if you'd like.

Best Regards,
[REDACTED]

[REDACTED]
Executive Secretary
U.S. Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, OR 97209
Ph: [REDACTED]

Attachment Classification: UNCLASSIFIED
Attachment Caveats: NONE

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

MAR 25 2011

REPLY TO
ATTENTION OF

Missouri River Basin Water Management Division

Ms. Sara Parker Pauley
Director, Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Dear Ms. Pauley:

Thank you for your letter dated March 15, 2011, requesting that the Corps of Engineers (Corps) forego implementation of the spring pulses from Gavins Point Dam. As you may know, it appears unlikely that a March pulse will be implemented due to high flows on the James and Missouri Rivers. A decision regarding the May pulse will be made based on observed and forecasted river conditions at that time. The Corps takes its role very seriously in operating the Missouri River Reservoir System, and strives to provide an open and transparent decision making process for our vast array of stakeholders.

The Final 2011 Annual Operating Plan, made available to the public in mid-December 2010, presented the Corps' intent to implement a bimodal spring pulse (March and May) from Gavins Point Dam in 2011. The bimodal spring pulse is in compliance with the Master Manual and is required to comply with the Endangered Species Act (ESA) and the 2003 Amended Biological Opinion (BiOp).

Safeguards to minimize the risk of downstream flooding due to the spring pulses were included in the 2006 revision to the Master Manual. These safeguards are termed "downstream flow limits" and are well below the channel capacity of the Missouri River. These flow limits are identical to the most restrictive of the flood control constraints presented in the Master Manual. Additional safeguards have been added. Under the current Master Manual, the Corps incorporates observed and anticipated precipitation into the Corps' river forecast to provide greater assurance that flows will remain below the downstream flow limits during the duration of the spring pulses. The Corps also has the option of reducing or eliminating the effect of the spring pulses on river stages below Kansas City if significant releases are being made from Corps tributary projects and if a temporary reduction in those releases would not cause undue risk to other areas.

I appreciate your comments related to the scientific basis for the spring pulses and highlighting recent research showing that hours of sunlight and water temperature, rather than flow, are the most likely proximate cue to induce pallid sturgeon spawning. The Corps vigorously supports the ongoing integrated research, monitoring, and evaluation program to identify the factors that may be limiting pallid sturgeon spawning and recruitment in the Missouri River. This work is being conducted by and for the Corps as part of the Missouri River Recovery Program.

Although much has been learned about the spring pulse and the pallid sturgeon during the previous several years, many uncertainties remain. To that end, an Independent Science Advisory Panel (ISAP) was established in January 2011 in partnership with the Missouri River Recovery Implementation Committee (MRRIC). The panel is comprised of six science advisors who will provide independent science support and technical oversight on specific topics. The initial topic selected for the ISAP is "Missouri River Spring Pulse and Adaptive Management".

The ISAP will review and provide recommendations to the Corps, U.S. Fish and Wildlife Service and the MRRIC on the expected outcomes of the Gavins Point Dam spring pulses. The panel will also review the metrics, monitoring, investigations and management actions, and provide recommendations on their potential refinement. The scope of the review includes:

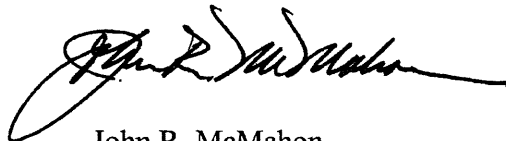
- Examine the goals and objectives of the spring pulses
- Recommend metrics to assess the spring pulses
- Identify ecological uncertainties and risk
- Identify changes, modifications or additions to monitoring program
- Identify focused investigations/research needs
- Recommend data analysis and assessment methods
- Examine potential management actions to evaluate as part of an Adaptive Management Program

The final ISAP report is scheduled for release in September 2011. The outcome of this scientific review will be used to develop an adaptive management plan for the Gavins Point Dam spring pulses to guide future changes to the research, monitoring and evaluation program and management actions.

The Corps continues to believe that the current Master Manual provides the appropriate balance of benefits to all authorized project purposes, fulfills our treaty and trust obligations to the basin Tribes, and complies with all Federal law, including the ESA.

I understand the importance of the Missouri River to citizens in the State of Missouri and appreciate your commitment to raise these issues on their behalf. If you or your staff has any questions, please feel free to contact me at (503) 808-3700, or Ms. Jody Farhat, Chief of Missouri River Basin Water Management Division, at (402) 996-3840.

Sincerely,

A handwritten signature in black ink, appearing to read "John R. McMahon", with a long horizontal flourish extending to the right.

John R. McMahon
Brigadier General, US Army
Division Commander

NWO

From: Williamson, Eileen L NWO
Sent: Tuesday, March 29, 2011 12:36 PM
To: [REDACTED] NWD02; Farhat, Jody S NWD02
Subject: Fact checking (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

This is in our talking points for flood preparation.

Kim asked me to check its accuracy.

o Most of Nebraska and the area along the Nebraska/Iowa border are located downstream of Gavins Point Dam, furthest downstream on the Missouri River. Releases from all of our reservoirs upstream of Gavins Point are managed in consideration of downstream conditions.

Eileen L. Williamson

Public Affairs Specialist

U.S. Army Corps of Engineers

Office: 402-995-2417

Mobile: 402-779-1448

eileen.l.williamson@usace.army.mil

Internet: nwo.usace.army.mil <<https://www.nwo.usace.army.mil/>>

Facebook: [facebook.com/OmahaUSACE](https://www.facebook.com/OmahaUSACE) <<http://www.facebook.com/OmahaUSACE>>

Twitter: [twitter.com/OmahaUSACE](https://www.twitter.com/OmahaUSACE) <<http://www.twitter.com/OmahaUSACE>>

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] S NWO
Sent: Tuesday, March 29, 2011 12:33 PM
To: Farhat, Jody S NWD02
Subject: River of Thirds Slide for You (UNCLASSIFIED)
Attachments: River of Thirds.pptx

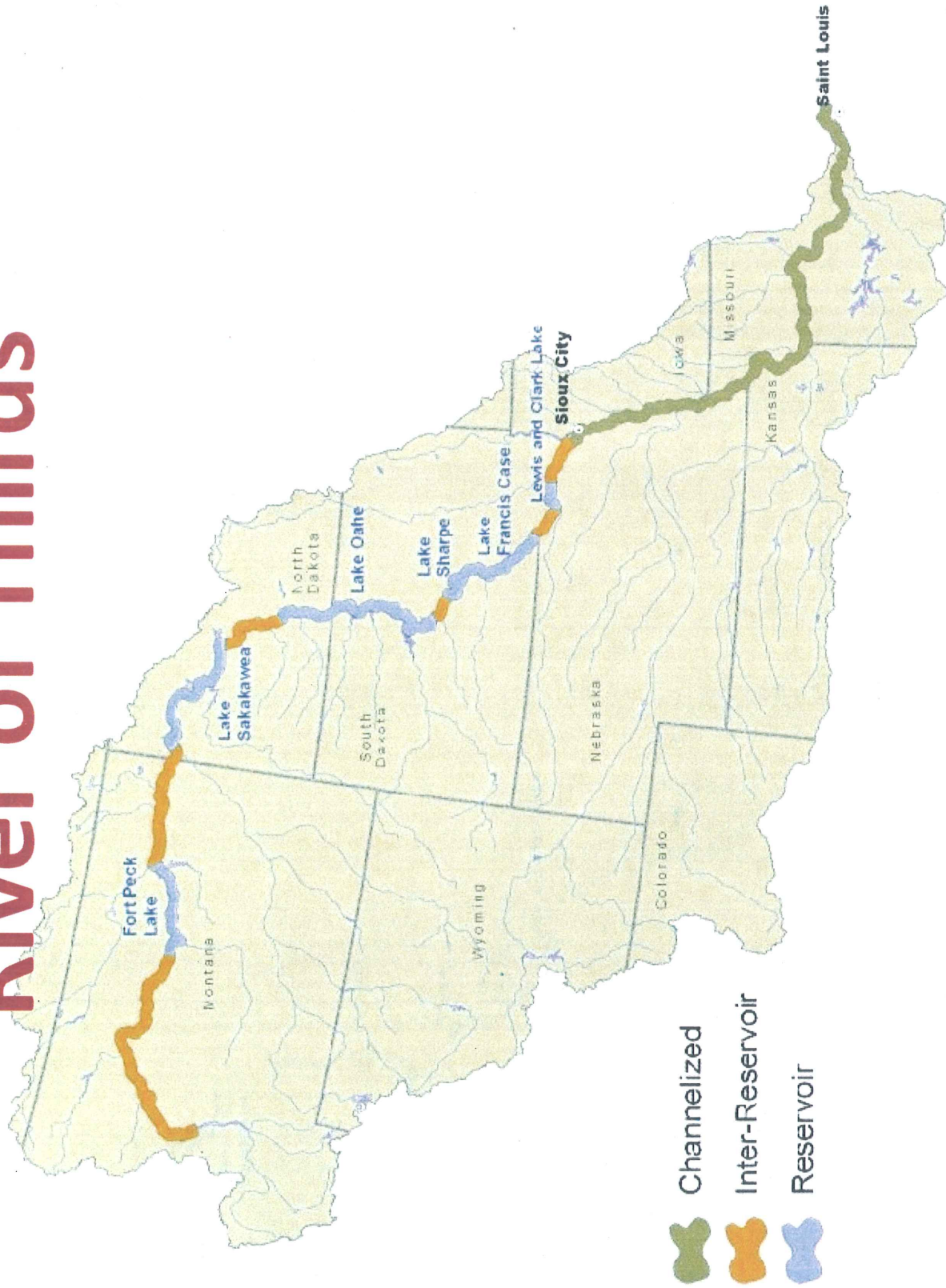
Classification: UNCLASSIFIED
Caveats: NONE

Here's a slide we put together that you may be interested in using.

[REDACTED]
Project Manager for the Missouri River
Recovery Implementation Committee (MRRIC) CENWO-PM-AC US Army Corps of Engineers, Omaha
District
1616 Capitol Avenue
Omaha, NE 68102-4901
Office: [REDACTED]
Mobile: [REDACTED]
Fax: [REDACTED]

Classification: UNCLASSIFIED
Caveats: NONE

River of Thirds



NWO

From: Anderson, G Witt NWD
Sent: Wednesday, March 30, 2011 1:51 PM
To: Farhat, Jody S NWD02; McMahon, John R BG NWD
Cc: Blechinger, Erik T NWO
Subject: Re: Missouri River Spring Rise (UNCLASSIFIED)

Thanks Jody, this has the right substance.

Witt

Message sent via my BlackBerry Wireless Device

----- Original Message -----

From: Farhat, Jody S NWD02
To: Farhat, Jody S NWD02; McMahon, John R BG NWD; Anderson, G Witt NWD
Cc: Blechinger, Erik T NWO
Sent: Wed Mar 30 11:07:04 2011
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Sir - attached is a draft response for your consideration. It is also pasted below for your convenience.

VR,
Jody

Dear Mr. Waters:

Thank you for your email regarding the Gavins Point spring pulse. The US Fish and Wildlife Service indicated in their 2003 Amended Biological Opinion (BiOp) that a bimodal spring pulse from Gavins Point dam was needed to preclude jeopardy to the endangered pallid sturgeon. The purpose of the spring pulse, as described in the BiOp, was to replicate the natural ebb and flow of the river to provide suitable spawning cues, connectivity to low lying lands, and to condition spawning habitat. This hypothesis was based on the best available science at the time the BiOp was written and is the basis for the Gavins Point spring pulse included in the Master Manual.

I appreciate your comments related to the scientific basis for the spring pulses and highlighting recent research showing that hours of sunlight and water temperature, rather than flow, are the most likely proximate cue to induce pallid sturgeon spawning. The Corps vigorously supports the ongoing integrated research, monitoring, and evaluation program to identify the factors that may be limiting pallid sturgeon spawning and recruitment in the Missouri River. This work is being conducted by and for the Corps as part of the Missouri River Recovery Program.

Although much has been learned about the spring pulse and the pallid sturgeon during the previous several years, many uncertainties remain. To that end, an Independent Science Advisory Panel (ISAP) was established in January 2011 in partnership with the Missouri River Recovery Implementation Committee (MRRIC). The panel is comprised of six science advisors who will provide independent science support and technical oversight on specific topics. The initial topic selected for the ISAP is "Missouri River Spring Pulse and Adaptive Management".

The ISAP will review and provide recommendations to the Corps, U.S. Fish and Wildlife Service and the MRRIC on the expected outcomes of the Gavins Point Dam spring pulses. The panel will also review the metrics, monitoring, investigations and management actions, and provide recommendations on their potential refinement. The scope of the review includes:

- Examine the goals and objectives of the spring pulses
- Recommend metrics to assess the spring pulses
- Identify ecological uncertainties and risk
- Identify changes, modifications or additions to monitoring program
- Identify focused investigations/research needs
- Recommend data analysis and assessment methods
- Examine potential management actions to evaluate as part of an Adaptive Management Program

The final ISAP report is scheduled for release in September 2011. The outcome of this scientific review will be used to develop an adaptive management plan for the Gavins Point Dam spring pulses to guide future changes to the research, monitoring and evaluation program and management actions.

The Corps continues to believe that the current Master Manual provides the appropriate balance of benefits to all authorized project purposes, fulfills our treaty and trust obligations to the basin Tribes, and complies with all Federal law, including the Endangered Species Act.

The Corps takes its role very seriously in operating the Missouri River Reservoir System, and strives to provide an open and transparent decision making process for our vast array of stakeholders. If you have any questions, please feel free to contact me at (503) 808-3700, or Ms. Jody Farhat, Chief of Missouri River Basin Water Management Division, at (402) 996-3840.

Sincerely,
John R. McMahon
Brigadier General, US Army
Division Commander

-----Original Message-----
From: Farhat, Jody S NWD02
Sent: Wednesday, March 30, 2011 9:57 AM
To: McMahon, John R BG NWD; Anderson, G Witt NWD
Cc: Blechinger, Erik T NWO
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Sir - I'll work on a short response. As for our statements to the press, our press release says the pulse is "to benefit the pallid sturgeon". When giving broader explanations to the press I tell them that the USFWS has indicated the pulse is needed to replicate the natural ebb and flow of the river to provide suitable spawning cues, connectivity to low lying lands, and to condition spawning habitat. The news media picks and chooses what they print/report and is more likely to leave things out than to elaborate.

I'll use much of the same response included in the Pauley letter and should have something to you soon.

Jody

-----Original Message-----

From: McMahon, John R BG NWD
Sent: Wednesday, March 30, 2011 9:39 AM
To: Anderson, G Witt NWD; Farhat, Jody S NWD02
Cc: Blechinger, Erik T NWO
Subject: Re: Missouri River Spring Rise (UNCLASSIFIED)

Thanks, Witt. As usual, 3 steps ahead of me...

----- Original Message -----

From: Anderson, G Witt NWD
To: Farhat, Jody S NWD02
Cc: Blechinger, Erik T NWO; McMahon, John R BG NWD; Fischer, Steven A NWK
Sent: Wed Mar 30 09:08:45 2011
Subject: FW: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody, could you and the team draft a short response for BG McMahon, or me, to send to Tom?

I'm not sure what Tom refers to with phrase "... staff would be more careful with the information distributed to the public..." - is it media statement or something we said? Regardless, I think Tom needs to know that we have the ISAP look underway for the very purpose of getting at the science behind the pulse.

Thanks,

Witt

-----Original Message-----

From: Tom & Karla Waters [mailto:waters4@ix.netcom.com]
Sent: Wednesday, March 30, 2011 6:53 AM
To: McMahon, John R BG NWD
Cc: Roe Melissa (Congressman Graves); Stundebek John & Carol; Colvin Eric (Howard Levee District #3); Famuliner George; Hawkins Garrett (MO Farm Bureau); Vandiver Perry; Shirley Steve; geibpallets@yahoo.com; Stundebek Matt; Frazier Jenny (Missouri AGO); Heil Nelson; Marshall Gary (MO Corn Growers); Spickert Donna (Congresswoman Hartzler); Kay Morris; Comodeca Mike; Padgett Darrel; Endsley Art & Christie; Oberdiek Gary; Wiedemeier Dan; Kerperin Kevin & Bob (Osage River); LePage Bill; Guier Nelson; Kirby Russ & Marcia; Dailey P.E. Steve (Fairfax Drainage District); Nölker Barb (Ray Co Farm Bureau); Kirby Karen; Alexander Terry (Consolidated North County LD); Dowdy Larry (Little River Drainage District); Duensing Doug & Carol; Engemann Dan (Congressman Luetkemeyer); Gooch Don; Gill John; Nail David; Lay Bill; Taylor Steve; Williamson John; [REDACTED] NWK; Lucietta Don (Senator Blunt); Matousek Mike (Congressman Graves); Stones Harold (Senator Roberts); Bohl Eric (Congresswoman Hartzler); Connor Jeffrey (Congresswoman Emerson); Huston John P.; Cothen Joe (EPA Region 7); Hafemeister Mary (Lower Chariton); Zeysing Robert H.; bmillerjr@emissourian.com; Weber Alan; Monks Janie (MO DNR); Beacom William; Meyer Steve; Leimkuehler Doris; Muench, Lynn M LRP; Fletcher W.C.; kctv@kctv5.com; [REDACTED] NWD; Jorns, Byron COL HQDA; Poldberg Mindy (Iowa Corn Growers); Ebersole Atalie (Congresswoman Emerson); Hockemeier Max; Gauthier Vincent (KC Port Authority); Hofbauer, Germaine HQ02; Gibbs Joseph; Wright Derry; Hershey Harry; Townsend Deanne; [REDACTED] NWK; Klingner Michael; Curtis Don (HDR); Coats Derek (Senator Blunt); Reeder Brenda; Richards Eugene (KTIS Radio); Jenkins Ronald; Meyerkorth Richard; rcityhall@aol.com; Russell McKinney (Ham Hill Farms, Inc.); Mahoney Larry; Voss Terry; Flores J.R. (NRCS); Richmond Vicki (Missouri River

Relief); Appleton Seth (Congressman Luetkemeyer); Twyman Maria Antonia; LePage Paul W.; Lyon Ashley; Hayes Rick; Twyman Mike; Davis Paul; Kuenzel Danny; Copeland David; Humphreys David; Bryan Bill (MO DNR); Keisker Larry; Stewart Kay (Congresswoman Hartzler); Shaw Tim; Gibson Ron; Asbury Randy (CPR); Westbrook Rick; Johnson Glenda; Ellis Lauren (Congressman Akin); Rhode Paul (Midwest Area Waterways, Inc.); Anderson, G Witt NWD; Ryland Utlaut (Mid-Missouri Energy, LLC); [REDACTED] NWK; Samson Maryann; Cruse, Lester External Stakeholder; Marble Gary (Congressman Luetkemeyer); Hurst Blake; Dickey Scott; Little Erin (KMBC-TV); Johnson Jerilyn; Banks David (L488); Jasper John; Brockmeier Joe; Blakley Ron; Hurst Blake (Missouri Farm Bureau); Edwards Jim; McManus John (MO AGO); Drew John (DNR); Hockemeier Farrell; Johnston, Paul T NWO; Thomas Joe; Pozzo John; Olin Arvin & Joan; Hartnett Katy (Congressman Carnahan); oem@kcmo.org; Brown Chris (Congressman Luetkemeyer); Roth, Mary S NWO; Gerlach Travis; Brockmeier Michael; Plattner Aaron; Dewey Dave (River Marine Enterprises); Sieck David; Roettger Eugene (MO Valley LD); Casner Kevin (Sugartree LD); Blair Dennis; Vanwinkle Terry; Imgarten Dave (Imgarten Farms); Rogers Mac (Ray County Ambulance District); Wyatt Charles; Walton James (KCMO Water); Maxwell Wes (FM Global); Diamond Kim; Schwoeppe Kenneth; Kuhler Steve; [REDACTED] MVS External Stakeholder; Dohrman Ben (Bartlett Grain); Macy Babette (Kissick Construction); Lyberger Jesse; Thorson John; Myers, Larry L NWK; Diederich Stephen (Wilton Landowner's L&D); Moran Medina (WCI); Grisham Becky (MO Corn Growers); Kinne Zach (Senator Blunt); Newham Kent (Ray-Carroll County Grain Growers); Pogge Frank (DFP Environmental Consulting, LLC); Disinger Katy (Senator McCaskill); Moyer Nathan; Cassidy Dan (Missouri Farm Bureau); Hall Cindy (Senator McCaskill); johnsonsj@centurytel.net; Blair, Amy E NWK; Sloniker Barbara; Phillips Tim (Ray Carroll); Perry Meagan; news@nbcactionnews.com; Wildberger Dottie (Halls Levee Distrit); Manson Ann Edwards; Ratto Mark (Congressman Graves); [REDACTED] NAD; Hommes Harold; Buckallew Adam (MO Soybean Assn.); Owsley Chuck; Farley Mike (Consolidated North County LD); Clark Scott; Berkley Jim (EPA); Bacon Bob; [REDACTED] NWK; Bledsoe Ron (Saline County LD); Leeds Terry (KCMO Water); Engemann Steve; Ramsey Mark (County Bank); Jackson Bill; Merensmeyer Wade (Ray-Carroll); Stone Mike (KMZU Radio); [REDACTED] NWO; Livers Richard; Ott Douglas (County Bank); Woolley Leslie (Congressman Cleaver); Luther Tim; Lewellen Rodney (Mi-De LD); Elsbury Angela; Eagleton Tim (FM Global); Turley Sherrie (MODOT); Smart Peggy; Berendzen Buffy (MO Dept of Ag); Shorr David; Poche David; Goodwin Clive; Haldeman Jeremy (Congressman Carnahan); Sandidge Brent; [REDACTED] NWK; Vickers Kyle; Stegmann Michael D.; Knickmeyer Mary; Fletcher John; Wells, Mike MVS External Stakeholder; Robinson Kim; Womack Abner; Vincze Robert; info@waterways.org; Madgett John; Vandiver Gary; Melzer Gary; kmbcnews@gmail.com; Kipping David; Kircher Lisa; Twyman Tim; Schwoeppe Suzanne; Jeff@concordiaimplement.com; Attema Menno; Littleton Bob; Evers, Jason A MAJ NWK; Durham David (Ray Co. LD #2); Popelka Aaron (Senator Moran); Wolfe Alan (ESI Contracting Corp); Wheeler Jim; Davis Art; Nordwald Mike (Ray-Carroll); Gloe Harold; Klenklen Chris (MO Dept. of Ag); Rudy James (Jay) USACE Napoleon; Walley George; Noll Rich (KCMO Water); Waters Linda; Maczuk Bill; Binder Darwin (L497); Nikodum Don; [REDACTED] HQ02; Dunn Thomas (Gateway Arch Riverfront); Glosemeyer Maurice; Moody Wayne; Jacob Scott; Johnson Jerilyn; newsdesk@kctv5.com; Rea Donald (St. Louis Water); Foreman Jarrell (Ray County FSA); Perry Ernie (MODOT); Daniels-Murray Larry (D Bar M LLC); Perry Bobby; Warren Beth; Combs, David L NWK; Martin, Cornel LRP; Stegmann Richard (Lange-Stegmann); Townsend Tom; Bell Tom (USFWS); McMullen Dalla; Perry Bob (Perry Ag Lab); Truesdale Sharmon (Waterways Council, Inc.); Kaiser Glenn & Nancy; Noltensmeyer John (Montgomery County); Armstrong Mike (WaterOne); Buhrmester Rex; Knopf David; Schupp Mark; Morgan Steve; Markt Carla; Tiemeyer Paul (Rock Port); Jacoby Karin; Boss Naomi (Congressman Graves); Keck J. (St. John's Levee & Drainage); news@kmbc.com; Arnold Mike; Klippenstein Brian (Senator Blunt); Dukes Corey (Senator McCaskill); Forck Kelly (Cole Junction LD); Vinning Rob; Howlett David (Price Howlett); Dorsey Darrell (BPU); Horgan Tom (Ameren); Perry Kristin (ALOT); Henry Peter (Senator Blunt); Wankum, Robin D NWK; Zimmel Peter; Susan@MissouriRuralServices.com; O'Dell Joyce; Dieckmann Phillis (City of Levasy); Fisher Sherry (AG Koster); Schluter C.C.; Manson Gary (Brunswick-Dalton LD); Paulsmeyer Duane; Elmore John; Nelson-Stastny Wayne (USFWS); Nance Bob; news@wdaftv4.com; Meyer Randy; [REDACTED] NWK; Carr Mark; Cieslik Larry (HDR); Seigfreid Paul; sswindler@mfa-inc.com; Stucker Marcus; [REDACTED] HQ02; Gentry Allen; Human David; Waters Glen; Smith Katie; [REDACTED] NWK; Schenk, Kathryn M NWO; Nail Jeff; Klingner Diaz Karla; Price

Marge (Price Howlett); Imgarten Barry; McNelly Josh (Ray-Carroll Crop Insurance); Sullivan Tade; Payne Tom (Dean-Mizzou CAFNR); Hofmann, Anthony J COL NWK; Mitas, Jim MVS External Stakeholder; Dawson John; Massman John; Franken John(Attorney); McNeall Ron; Prenger Daniel (Prenger Farms); Porter Clark (Senator McCaskill); Hecox Rob; Slade Kathy; Johnson Sam; Davis Adam (Congresswoman Hartzler); Hoffman Linda(KCMO Water); Kucera Ron; Cowherd Emmalie; Waters Farms, Inc.; Holloway Leslie (MO Farm Bureau); Brennan Larry (Kaw Valley Drainage); Erfling Wilmer; Lucy Gary & Sandy; Blalock Steve; Meng Lanny; Fergason Roger; Jenkins Holly (Congressman Cleaver); Redmond Jeane (Z Bar Farms); Schlicht Mark(ESI Contracting Corp); Daniels Jimmy (Whitham Levee District); Hardecke Ron; Stock Tom; Alder Powers; Flickner Ryan (Senator Roberts); Trachsel Wayne (Chamois LD); Davids@Sydenstrickerimp.com; Campbell Billy (Goppert Financial Bank); Randy Asbury; Gebhardt Jeffrey (Lower Chariton); Manson Nicholas; Babb Robert; Munson Ross Carol; Williamson Bob (KCMO Water); Mayfield Ann; Ruch, Robert J COL NWO; Whitley Melvin; Fleming, Lisa HQ; Steele Brad; Proffitt Jim; Manson Phil (Brunswick-Dalton LD); Schrempp Tom; Schaffer John (Union Township Drainage District); Jorgensen Don; Stouffer Bill; Ludwig Dale (MO Soybean Assn.); Rouse Karen; Frakes Lanny; Blackwell Bill; Rehmeier Dean (Augusta Bottom Levee Protection Assoc.); McMurry Dave (UMIMRA); Clemens Jim; Fuhrman Dan; Farhat, Jody S NWD02; McNeall Raymond
Subject: Missouri River Spring Rise
Importance: High

Brigadier General John R. McMahon

Commander, Northwestern Division, USACE

Dear General McMahon:

The following quotes from the attached USGS document would indicate temperature and length of day are the keys to the spawning cue for the pallid sturgeon. More recent data indicates very limited pallid sturgeon spawning has occurred in associated with a spring rise and spawning has also occurred without a rise. Data from the shovel nose sturgeon also indicates spawning occurs with or without the rise. This would indicate the spring rise is not necessary to prompt pallid sturgeon spawning.

Recent articles in the news media have state the spring rise prompts the pallid sturgeon to spawn. The media uses the Corps of Engineers as sources for their stories. I believe there is no conclusive data that indicates the spring rise cues the pallid sturgeon to spawn. We continue to ask for data from the US Fish and Wildlife Service which supports the spring rise theory and to date still have never been given any documentation supporting the Spring Rise science experiments.

I understand the data below is fairly new (2009) and there is still much to be learned about the pallid sturgeon's spawning. But, until there is scientific data available to support the spring rise, I hope your staff would be more careful with the information distributed to the public. Stating the spring rise prompts spawning is not accurate and at best it is still just an unsubstantiated hypothesis. With the lack of scientific evidence to prove otherwise, a more accurate portrayal of the spring rise would be to refer to it as a test, trial or experiment called for in the USFWS biological opinion.

The USFWS, with their biological opinion, is forcing the Corps of Engineers to conduct or attempt to conduct two spring rises each year as nothing more than unfounded science experiments. There has been no data made available to support the theory the spring rise prompts the pallid sturgeon to spawn. I remain hopeful this dangerous and unwarranted action will soon be cancelled permanently. I appreciate the cancellation of the planned March rise and continue to pray the planned May rise will also be cancelled.

As always, I appreciate the position the USFWS has placed the Corps in with their demands for a spring rise and thank you for your service to our country and the people who live and work along the Missouri River.

Sincerely,

Tom Waters, Chairman
Missouri Levee & Drainage District Association

"While data are as yet limited on the rare pallid sturgeon, this study has successfully documented spawning in the mainstem Lower Missouri River from late April to mid-May at several locations, and under a wide range of geomorphic and hydraulic conditions.

Environmental factors such as temperature fluctuations or flood events may disrupt spawning migration patterns and possibly inhibit spawning."

"Spawning fish use areas of converging, turbulent flow with relatively high velocity and great depth, conditions that exist on the outside of most bends."

"The likely factors that advance spawning readiness and define the temporal window within which spawning occurs are length of day and water temperature."

"Existing discharge, temperature, and migration pattern data for shovelnose and pallid sturgeon spawning indicate a temperature threshold for spawning of 16 degrees Celsius, but do not indicate a specific migratory or spawning response to discrete flow pulses."

Associated Press (AP) - Pierre Bureau Pierre, SD 03/14/2011 Corps may drop March pulse on Missouri River SIOUX FALLS, S.D. The Army Corps of Engineers said it might cancel the March surge of extra water meant to help an endangered fish in the Missouri River. The so-called spring pulse below Gavins Point Dam is meant to replicate a natural spring rise that prompts the pallid sturgeon to spawn.

The corps said the two-day March pulse could be canceled if the river level is already high from spring runoff. The corps said implementing a second pulse planned for May also will depend on the river level.

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Omaha World-Herald - Online Omaha, NE 03/29/2011 No surge for pallid sturgeon - By David Hendee Mother Nature is replacing the Army as the pallid sturgeon's cupid - at least temporarily.

The U.S. Army Corps of Engineers canceled plans to release a surge of additional water into the Missouri River to benefit the endangered sturgeon this month because of high flows in eastern South Dakota tributaries.

The melt of extensive Plains snowpack eliminated the need for a two-day surge, said Jody Farhat, chief of the Army Corps' water management office in Omaha.

Pallid sturgeon need higher spring flows to cue spawning and to link them to other areas of the river during their life cycle. The spring pulse from Gavins Point Dam, located on the Nebraska and South Dakota border, is meant to replicate a natural seasonal rise that prompts the species to spawn.

Pallid sturgeon are an ancient species protected by the Endangered Species Act.

The March pulse was to be 5,000 cubic feet per second minus the James River flow near its confluence with the Missouri upstream of Sioux City, Iowa. Monday's flow on the James River was nearly 25,000 cfs. The river is expected to remain high for the foreseeable future.

The Missouri already is above downstream flow limits set to reduce or eliminate farmland flooding at Omaha, Nebraska City and Kansas City, Mo.

A pulse also is scheduled for May. River conditions will be evaluated after May 1 to determine the feasibility and timing, Farhat said.

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

NWO

From: [REDACTED] NWK
Sent: Wednesday, March 30, 2011 11:15 AM
To: Farhat, Jody S NWD02
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

You bet! And thanks for sharing the letter to Ms Pauley.

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Wednesday, March 30, 2011 11:10 AM
To: [REDACTED] NWK
Cc: Blechinger, Erik T NWO
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Steve - thanks for the offer, but we've got it. I just sent the commander a draft response very similar to the letter he sent to Sara Pauley last week. I'll be sure to send you a copy of his response when he sends it. A copy of the Pauley letter is attached FYI.

Jody

-----Original Message-----

From: [REDACTED] NWK
Sent: Wednesday, March 30, 2011 9:17 AM
To: Farhat, Jody S NWD02
Cc: Blechinger, Erik T NWO
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

I just called your office only to find out you are out in Portland -- lucky you!

So -- how would you like to handle this request? We can definitely get you some facts to include in the response letter if you would like?

Steve

-----Original Message-----

From: Anderson, G Witt NWD
Sent: Wednesday, March 30, 2011 9:09 AM
To: Farhat, Jody S NWD02
Cc: Blechinger, Erik T NWO; McMahon, John R BG NWD; [REDACTED] NWK
Subject: FW: Missouri River Spring Rise (UNCLASSIFIED)
Importance: High

Classification: UNCLASSIFIED

Caveats: NONE

Jody, could you and the team draft a short response for BG McMahon, or me, to send to Tom?

I'm not sure what Tom refers to with phrase "... staff would be more careful with the information distributed to the public..." - is it media statement or something we said? Regardless, I think Tom needs to know that we have the ISAP look underway for the very purpose of getting at the science behind the pulse.

Thanks,

Witt

-----Original Message-----

From: Tom & Karla Waters [mailto:waters4@ix.netcom.com]

Sent: Wednesday, March 30, 2011 6:53 AM

To: McMahon, John R BG NWD

Cc: Roe Melissa (Congressman Graves); Stundebek John & Carol; Colvin Eric (Howard Levee District #3); Famuliner George; Hawkins Garrett (MO Farm Bureau); Vandiver Perry; Shirley Steve; geibpallets@yahoo.com; Stundebek Matt; Frazier Jenny (Missouri AGO); Heil Nelson; Marshall Gary (MO Corn Growers); Spickert Donna (Congresswoman Hartzler); Kay Morris; Comodeca Mike; Padgett Darrel; Endsley Art & Christie; Oberdiek Gary; Wiedemeier Dan; Kerperin Kevin & Bob (Osage River); LePage Bill; Guier Nelson; Kirby Russ & Marcia; Dailey P.E. Steve (Fairfax Drainage District); Nolker Barb (Ray Co Farm Bureau); Kirby Karen; Alexander Terry (Consolidated North County LD); Dowdy Larry (Little River Drainage District); Duensing Doug & Carol; Engemann Dan (Congressman Luetkemeyer); Gooch Don; Gill John; Nail David; Lay Bill; Taylor Steve; Williamson John; [REDACTED] NWK; Lucietta Don (Senator Blunt); Matousek Mike (Congressman Graves); Stones Harold (Senator Roberts); Bohl Eric (Congresswoman Hartzler); Connor Jeffrey (Congresswoman Emerson); Huston John P.; Cothen Joe (EPA Region 7); Hafemeister Mary (Lower Chariton); Zeysing Robert H.; bmillerjr@emissourian.com; Weber Alan; Monks Janie (MO DNR); Beacom William; Meyer Steve; Leimkuehler Doris; Muench, Lynn M LRP; Fletcher W.C.; kctv@kctv5.com; [REDACTED] NWD; Jorns, Byron COL HQDA; Poldberg Mindy (Iowa Corn Growers); Ebersole Atalie (Congresswoman Emerson); Hockemeier Max; Gauthier Vincent (KC Port Authority); Hofbauer, Germaine HQ02; Gibbs Joseph; Wright Derry; Hershey Harry; Townsend Deanne; [REDACTED] NWK; Klingner Michael; Curtis Don (HDR); Coats Derek (Senator Blunt); Reeder Brenda; Richards Eugene (KTIS Radio); Jenkins Ronald; Meyerkorth Richard; rcityhall@aol.com; Russell McKinney (Ham Hill Farms, Inc.); Mahoney Larry; Voss Terry; Flores J.R. (NRCS); Richmond Vicki (Missouri River Relief); Appleton Seth (Congressman Luetkemeyer); Twyman Maria Antonia; LePage Paul W.; Lyon Ashley; Hayes Rick; Twyman Mike; Davis Paul; Kuenzel Danny; Copeland David; Humphreys David; Bryan Bill (MO DNR); Keisker Larry; Stewart Kay (Congresswoman Hartzler); Shaw Tim; Gibson Ron; Asbury Randy (CPR); Westbrook Rick; Johnson Glenda; Ellis Lauren (Congressman Akin); Rhode Paul (Midwest Area Waterways, Inc.); Anderson, G Witt NWD; Ryland Utlaut (Mid-Missouri Energy, LLC); Sanders, Clifford W NWK; Samson Maryann; Cruse, Lester External Stakeholder; Marble Gary (Congressman Luetkemeyer); Hurst Blake; Dickey Scott; Little Erin (KMBC-TV); Johnson Jerilyn; Banks David (L488); Jasper John; Brockmeier Joe; Blakley Ron; Hurst Blake (Missouri Farm Bureau); Edwards Jim; McManus John (MO AGO); Drew John (DNR); Hockemeier Farrell; Johnston, Paul T NWO; Thomas Joe; Pozzo John; Olin Arvin & Joan; Hartnett Katy (Congressman Carnahan); oem@kcmo.org; Brown Chris (Congressman Luetkemeyer); Roth, Mary S NWO; Gerlach Travis; Brockmeier Michael; Plattner Aaron; Dewey Dave (River Marine Enterprises); Sieck David; Roettger Eugene (MO Valley LD); Casner Kevin (Sugartree LD); Blair Dennis; Vanwinkle Terry; Imgarten Dave (Imgarten Farms); Rogers Mac (Ray County Ambulance District); Wyatt Charles; Walton James (KCMO Water); Maxwell Wes (FM Global); Diamond Kim; Schwoeppe Kenneth; Kuhler Steve; Lensing, Brian MVS External Stakeholder; Dohrman Ben (Bartlett Grain); Macy Babette (Kissick Construction); Lyberger Jesse; Thorson John; Myers, Larry L NWK; Diederich Stephen (Wilton Landowner's L&D); Moran Medina (WCI); Grisham Becky (MO Corn Growers); Kinne Zach (Senator Blunt); Newham Kent (Ray-Carroll County Grain

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Subject: Missouri River Spring Rise
Importance: High

Brigadier General John R. McMahon

Commander, Northwestern Division, USACE

Dear General McMahon:

The following quotes from the attached USGS document would indicate temperature and length of day are the keys to the spawning cue for the pallid sturgeon. More recent data indicates very limited pallid sturgeon spawning has occurred in associated with a spring rise and spawning has also occurred without a rise. Data from the shovel nose sturgeon also indicates spawning occurs with or without the rise. This would indicate the spring rise is not necessary to prompt pallid sturgeon spawning.

Recent articles in the news media have state the spring rise prompts the pallid sturgeon to spawn. The media uses the Corps of Engineers as sources for their stories. I believe there is no conclusive data that indicates the spring rise cues the pallid sturgeon to spawn. We continue to ask for data from the US Fish and Wildlife Service which supports the spring rise theory and to date still have never been given any documentation supporting the Spring Rise science experiments.

I understand the data below is fairly new (2009) and there is still much to be learned about the pallid sturgeon's spawning. But, until there is scientific data available to support the spring rise, I hope your staff would be more careful with the information distributed to the public. Stating the spring rise prompts spawning is not accurate and at best it is still just an unsubstantiated hypothesis. With the lack of scientific evidence to prove otherwise, a more accurate portrayal of the spring rise would be to refer to it as a test, trial or experiment called for in the USFWS biological opinion.

The USFWS, with their biological opinion, is forcing the Corps of Engineers to conduct or attempt to conduct two spring rises each year as nothing more than unfounded science experiments. There has been no data made available to support the theory the spring rise prompts the pallid sturgeon to spawn. I remain hopeful this dangerous and unwarranted action will soon be cancelled permanently. I appreciate the cancellation of the planned March rise and continue to pray the planned May rise will also be cancelled.

As always, I appreciate the position the USFWS has placed the Corps in with their demands for a spring rise and thank you for your service to our country and the people who live and work along the Missouri River.

Sincerely,

Tom Waters, Chairman
Missouri Levee & Drainage District Association

"While data are as yet limited on the rare pallid sturgeon, this study has successfully documented spawning in the mainstem Lower Missouri River from late April to mid-May at several locations, and under a wide range of geomorphic and hydraulic conditions.

Environmental factors such as temperature fluctuations or flood events may disrupt spawning migration patterns and possibly inhibit spawning."

“Spawning fish use areas of converging, turbulent flow with relatively high velocity and great depth, conditions that exist on the outside of most bends.”

“The likely factors that advance spawning readiness and define the temporal window within which spawning occurs are length of day and water temperature.”

“Existing discharge, temperature, and migration pattern data for shovelnose and pallid sturgeon spawning indicate a temperature threshold for spawning of 16 degrees Celsius, but do not indicate a specific migratory or spawning response to discrete flow pulses.”

Associated Press (AP) - Pierre Bureau Pierre, SD 03/14/2011 Corps may drop March pulse on Missouri River SIOUX FALLS, S.D. The Army Corps of Engineers said it might cancel the March surge of extra water meant to help an endangered fish in the Missouri River. The so-called spring pulse below Gavins Point Dam is meant to replicate a natural spring rise that prompts the pallid sturgeon to spawn. The corps said the two-day March pulse could be canceled if the river level is already high from spring runoff. The corps said implementing a second pulse planned for May also will depend on the river level. Copyright © 2011 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Omaha World-Herald - Online Omaha, NE 03/29/2011 No surge for pallid sturgeon - By David Hendee Mother Nature is replacing the Army as the pallid sturgeon's cupid – at least temporarily. The U.S. Army Corps of Engineers canceled plans to release a surge of additional water into the Missouri River to benefit the endangered sturgeon this month because of high flows in eastern South Dakota tributaries. The melt of extensive Plains snowpack eliminated the need for a two-day surge, said Jody Farhat, chief of the Army Corps' water management office in Omaha. Pallid sturgeon need higher spring flows to cue spawning and to link them to other areas of the river during their life cycle. The spring pulse from Gavins Point Dam, located on the Nebraska and South Dakota border, is meant to replicate a natural seasonal rise that prompts the species to spawn. Pallid sturgeon are an ancient species protected by the Endangered Species Act. The March pulse was to be 5,000 cubic feet per second minus the James River flow near its confluence with the Missouri upstream of Sioux City, Iowa. Monday's flow on the James River was nearly 25,000 cfs. The river is expected to remain high for the foreseeable future. The Missouri already is above downstream flow limits set to reduce or eliminate farmland flooding at Omaha, Nebraska City and Kansas City, Mo. A pulse also is scheduled for May. River conditions will be evaluated after May 1 to determine the feasibility and timing, Farhat said.

Classification: UNCLASSIFIED
Caveats: NONE

From: Farhat, Jody S NWD02
Sent: Wednesday, March 30, 2011 11:07 AM
To: Farhat, Jody S NWD02; McMahon, John R BG NWD; Anderson, G Witt NWD
Cc: Blechinger, Erik T NWO
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)
Attachments: Waters response.docx

Classification: UNCLASSIFIED
Caveats: NONE

Sir - attached is a draft response for your consideration. It is also pasted below for your convenience.

VR,
Jody

Dear Mr. Waters:

Thank you for your email regarding the Gavins Point spring pulse. The US Fish and Wildlife Service indicated in their 2003 Amended Biological Opinion (BiOp) that a bimodal spring pulse from Gavins Point dam was needed to preclude jeopardy to the endangered pallid sturgeon. The purpose of the spring pulse, as described in the BiOp, was to replicate the natural ebb and flow of the river to provide suitable spawning cues, connectivity to low lying lands, and to condition spawning habitat. This hypothesis was based on the best available science at the time the BiOp was written and is the basis for the Gavins Point spring pulse included in the Master Manual.

I appreciate your comments related to the scientific basis for the spring pulses and highlighting recent research showing that hours of sunlight and water temperature, rather than flow, are the most likely proximate cue to induce pallid sturgeon spawning. The Corps vigorously supports the ongoing integrated research, monitoring, and evaluation program to identify the factors that may be limiting pallid sturgeon spawning and recruitment in the Missouri River. This work is being conducted by and for the Corps as part of the Missouri River Recovery Program.

Although much has been learned about the spring pulse and the pallid sturgeon during the previous several years, many uncertainties remain. To that end, an Independent Science Advisory Panel (ISAP) was established in January 2011 in partnership with the Missouri River Recovery Implementation Committee (MRRIC). The panel is comprised of six science advisors who will provide independent science support and technical oversight on specific topics. The initial topic selected for the ISAP is "Missouri River Spring Pulse and Adaptive Management".

The ISAP will review and provide recommendations to the Corps, U.S. Fish and Wildlife Service and the MRRIC on the expected outcomes of the Gavins Point Dam spring pulses. The panel will also review the metrics, monitoring, investigations and management actions, and provide recommendations on their potential refinement. The scope of the review includes:

- Examine the goals and objectives of the spring pulses
- Recommend metrics to assess the spring pulses
- Identify ecological uncertainties and risk
- Identify changes, modifications or additions to monitoring program
- Identify focused investigations/research needs
- Recommend data analysis and assessment methods

- Examine potential management actions to evaluate as part of an Adaptive Management Program

The final ISAP report is scheduled for release in September 2011. The outcome of this scientific review will be used to develop an adaptive management plan for the Gavins Point Dam spring pulses to guide future changes to the research, monitoring and evaluation program and management actions.

The Corps continues to believe that the current Master Manual provides the appropriate balance of benefits to all authorized project purposes, fulfills our treaty and trust obligations to the basin Tribes, and complies with all Federal law, including the Endangered Species Act.

The Corps takes its role very seriously in operating the Missouri River Reservoir System, and strives to provide an open and transparent decision making process for our vast array of stakeholders. If you have any questions, please feel free to contact me at (503) 808-3700, or Ms. Jody Farhat, Chief of Missouri River Basin Water Management Division, at (402) 996-3840.

Sincerely,
John R. McMahon
Brigadier General, US Army
Division Commander

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Wednesday, March 30, 2011 9:57 AM
To: McMahon, John R BG NWD; Anderson, G Witt NWD
Cc: Blechinger, Erik T NWO
Subject: RE: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Sir - I'll work on a short response. As for our statements to the press, our press release says the pulse is "to benefit the pallid sturgeon". When giving broader explanations to the press I tell them that the USFWS has indicated the pulse is needed to replicate the natural ebb and flow of the river to provide suitable spawning cues, connectivity to low lying lands, and to condition spawning habitat. The news media picks and chooses what they print/report and is more likely to leave things out than to elaborate.

I'll use much of the same response included in the Pauley letter and should have something to you soon.

Jody

-----Original Message-----

From: McMahon, John R BG NWD
Sent: Wednesday, March 30, 2011 9:39 AM
To: Anderson, G Witt NWD; Farhat, Jody S NWD02
Cc: Blechinger, Erik T NWO
Subject: Re: Missouri River Spring Rise (UNCLASSIFIED)

Thanks, Witt. As usual, 3 steps ahead of me...

----- Original Message -----

From: Anderson, G Witt NWD
To: Farhat, Jody S NWD02
Cc: Blechinger, Erik T NWO; McMahon, John R BG NWD; Fischer, Steven A NWK
Sent: Wed Mar 30 09:08:45 2011
Subject: FW: Missouri River Spring Rise (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody, could you and the team draft a short response for BG McMahon, or me, to send to Tom?

I'm not sure what Tom refers to with phrase "... staff would be more careful with the information distributed to the public..." - is it media statement or something we said? Regardless, I think Tom needs to know that we have the ISAP look underway for the very purpose of getting at the science behind the pulse.

Thanks,

Witt

-----Original Message-----

From: Tom & Karla Waters [mailto:waters4@ix.netcom.com]
Sent: Wednesday, March 30, 2011 6:53 AM
To: McMahon, John R BG NWD
Cc: Roe Melissa (Congressman Graves); Stundebek John & Carol; Colvin Eric (Howard Levee District #3); Famuliner George; Hawkins Garrett (MO Farm Bureau); Vandiver Perry; Shirley Steve; geibpallets@yahoo.com; Stundebek Matt; Frazier Jenny (Missouri AGO); Heil Nelson; Marshall Gary (MO Corn Growers); Spickert Donna (Congresswoman Hartzler); Kay Morris; Comodeca Mike; Padgett Darrel; Endsley Art & Christie; Oberdiek Gary; Wiedemeier Dan; Kerperin Kevin & Bob (Osage River); LePage Bill; Guier Nelson; Kirby Russ & Marcia; Dailey P.E. Steve (Fairfax Drainage District); Nolker Barb (Ray Co Farm Bureau); Kirby Karen; Alexander Terry (Consolidated North County LD); Dowdy Larry (Little River Drainage District); Duensing Doug & Carol; Engemann Dan (Congressman Luetkemeyer); Gooch Don; Gill John; Nail David; Lay Bill; Taylor Steve; Williamson John; [REDACTED] NWK; Lucietta Don (Senator Blunt); Matousek Mike (Congressman Graves); Stones Harold (Senator Roberts); Bohl Eric (Congresswoman Hartzler); Connor Jeffrey (Congresswoman Emerson); Huston John P.; Cothen Joe (EPA Region 7); Hafemeister Mary (Lower Chariton); Zeysing Robert H.; bmillerjr@emissourian.com; Weber Alan; Monks Janie (MO DNR); Beacom William; Meyer Steve; Leimkuehler Doris; [REDACTED] LRP; Fletcher W.C.; kctv@kctv5.com; [REDACTED] NWK; Jorns, Byron COL HQDA; Poldberg Mindy (Iowa Corn Growers); Ebersole Atalie (Congresswoman Emerson); Hockemeier Max; Gauthier Vincent (KC Port Authority); Hofbauer, Germaine HQ02; Gibbs Joseph; Wright Derry; Hershey Harry; Townsend Deanne; [REDACTED] NWK; Klingner Michael; Curtis Don (HDR); Coats Derek (Senator Blunt); Reeder Brenda; Richards Eugene (KTIS Radio); Jenkins Ronald; Meyerkorth Richard; rcityhall@aol.com; Russell McKinney (Ham Hill Farms, Inc.); Mahoney Larry; Voss Terry; Flores J.R. (NRCS); Richmond Vicki (Missouri River Relief); Appleton Seth (Congressman Luetkemeyer); Twyman Maria Antonia; LePage Paul W.; Lyon Ashley; Hayes Rick; Twyman Mike; Davis Paul; Kuenzel Danny; Copeland David; Humphreys David; Bryan Bill (MO DNR); Keisker Larry; Stewart Kay (Congresswoman Hartzler); Shaw Tim; Gibson Ron; Asbury Randy (CPR); Westbrook Rick; Johnson Glenda; Ellis Lauren (Congressman Akin); Rhode Paul (Midwest Area Waterways, Inc.); Anderson, G Witt NWD; Ryland Utlaut (Mid-Missouri Energy, LLC); Sanders, Clifford W NWK; Samson Maryann; Cruse, Lester External Stakeholder; Marble Gary (Congressman Luetkemeyer); Hurst Blake; Dickey Scott; Little Erin (KMBC-TV); Johnson Jerilyn; Banks David (L488); Jasper John; Brockmeier Joe; Blakley Ron; Hurst Blake (Missouri Farm Bureau); Edwards Jim; McManus John (MO AGO); Drew John (DNR); Hockemeier Farrell; Johnston, Paul T NWO; Thomas Joe; Pozzo John; Olin Arvin & Joan; Hartnett Katy (Congressman Carnahan); oem@kcmo.org; Brown Chris (Congressman Luetkemeyer); Roth, Mary S NWO; Gerlach Travis; Brockmeier Michael; Plattner Aaron; Dewey Dave (River Marine)

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Recent articles in the news media have state the spring rise prompts the pallid sturgeon to spawn. The media uses the Corps of Engineers as sources for their stories. I believe there is no conclusive data that indicates the spring rise cues the pallid sturgeon to spawn. We continue to ask for data from the US Fish and Wildlife Service which supports the spring rise theory and to date still have never been given any documentation supporting the Spring Rise science experiments.

I understand the data below is fairly new (2009) and there is still much to be learned about the pallid sturgeon's spawning. But, until there is scientific data available to support the spring rise, I hope your staff would be more careful with the information distributed to the public. Stating the spring rise prompts spawning is not accurate and at best it is still just an unsubstantiated hypothesis. With the lack of scientific evidence to prove otherwise, a more accurate portrayal of the spring rise would be to refer to it as a test, trial or experiment called for in the USFWS biological opinion.

The USFWS, with their biological opinion, is forcing the Corps of Engineers to conduct or attempt to conduct two spring rises each year as nothing more than unfounded science experiments. There has been no data made available to support the theory the spring rise prompts the pallid sturgeon to spawn. I remain hopeful this dangerous and unwarranted action will soon be cancelled permanently. I appreciate the cancellation of the planned March rise and continue to pray the planned May rise will also be cancelled.

As always, I appreciate the position the USFWS has placed the Corps in with their demands for a spring rise and thank you for your service to our country and the people who live and work along the Missouri River.

Sincerely,

Tom Waters, Chairman
Missouri Levee & Drainage District Association

"While data are as yet limited on the rare pallid sturgeon, this study has successfully documented spawning in the mainstem Lower Missouri River from late April to mid-May at several locations, and under a wide range of geomorphic and hydraulic conditions.

Environmental factors such as temperature fluctuations or flood events may disrupt spawning migration patterns and possibly inhibit spawning."

"Spawning fish use areas of converging, turbulent flow with relatively high velocity and great depth, conditions that exist on the outside of most bends."

"The likely factors that advance spawning readiness and define the temporal window within which spawning occurs are length of day and water temperature."

"Existing discharge, temperature, and migration pattern data for shovelnose and pallid sturgeon spawning indicate a temperature threshold for spawning of 16 degrees Celsius, but do not indicate a specific migratory or spawning response to discrete flow pulses."

Associated Press (AP) - Pierre Bureau Pierre, SD 03/14/2011 Corps may drop March pulse on Missouri River SIOUX FALLS, S.D. The Army Corps of Engineers said it might cancel the March surge of extra water meant to help an endangered fish in the Missouri River. The so-called spring pulse below Gavins Point Dam is meant to replicate a natural spring rise that prompts the pallid sturgeon to spawn. The corps said the two-day March pulse could be canceled if the river level is already high from spring runoff. The corps said implementing a second pulse planned for May also will depend on the river level. Copyright © 2011 The Associated Press. All rights reserved. This material may not be published, broadcast, rewritten or redistributed.

Omaha World-Herald - Online Omaha, NE 03/29/2011 No surge for pallid sturgeon - By David Hendee Mother Nature is replacing the Army as the pallid sturgeon's cupid - at least temporarily. The U.S. Army Corps of Engineers canceled plans to release a surge of additional water into the Missouri River to benefit the endangered sturgeon this month because of high flows in eastern South Dakota tributaries. The melt of extensive Plains snowpack eliminated the need for a two-day surge, said Jody Farhat, chief of the Army Corps' water management office in Omaha. Pallid sturgeon need higher spring flows to cue spawning and to link them to other areas of the river during their life cycle. The spring pulse from Gavins Point Dam, located on the Nebraska and South Dakota border, is meant to replicate a natural seasonal rise that prompts the species to spawn. Pallid sturgeon are an ancient species protected by the Endangered Species Act. The March pulse was to be 5,000 cubic feet per second minus the James River flow near its confluence with the Missouri upstream of Sioux City, Iowa. Monday's flow on the James River was nearly 25,000 cfs. The river is expected to remain high for the foreseeable future. The Missouri already is above downstream flow limits set to reduce or eliminate farmland flooding at Omaha, Nebraska City and Kansas City, Mo. A pulse also is scheduled for May. River conditions will be evaluated after May 1 to determine the feasibility and timing, Farhat said.

Dear Mr. Waters:

Thank you for your email regarding the Gavins Point spring pulse. The US Fish and Wildlife Service indicated in their 2003 Amended Biological Opinion (BiOp) that a bimodal spring pulse from Gavins Point dam was needed to preclude jeopardy to the endangered pallid sturgeon. The purpose of the spring pulse, as described in the BiOp, was to replicate the natural ebb and flow of the river to provide suitable spawning cues, connectivity to low lying lands, and to condition spawning habitat. This hypothesis was based on the best available science at the time the BiOp was written and is the basis for the Gavins Point spring pulse included in the Master Manual.

I appreciate your comments related to the scientific basis for the spring pulses and highlighting recent research showing that hours of sunlight and water temperature, rather than flow, are the most likely proximate cue to induce pallid sturgeon spawning. The Corps vigorously supports the ongoing integrated research, monitoring, and evaluation program to identify the factors that may be limiting pallid sturgeon spawning and recruitment in the Missouri River. This work is being conducted by and for the Corps as part of the Missouri River Recovery Program.

Although much has been learned about the spring pulse and the pallid sturgeon during the previous several years, many uncertainties remain. To that end, an Independent Science Advisory Panel (ISAP) was established in January 2011 in partnership with the Missouri River Recovery Implementation Committee (MRRIC). The panel is comprised of six science advisors who will provide independent science support and technical oversight on specific topics. The initial topic selected for the ISAP is "Missouri River Spring Pulse and Adaptive Management".

The ISAP will review and provide recommendations to the Corps, U.S. Fish and Wildlife Service and the MRRIC on the expected outcomes of the Gavins Point Dam spring pulses. The panel will also review the metrics, monitoring, investigations and management actions, and provide recommendations on their potential refinement. The scope of the review includes:

- Examine the goals and objectives of the spring pulses
- Recommend metrics to assess the spring pulses
- Identify ecological uncertainties and risk
- Identify changes, modifications or additions to monitoring program
- Identify focused investigations/research needs
- Recommend data analysis and assessment methods
- Examine potential management actions to evaluate as part of an Adaptive Management Program

The final ISAP report is scheduled for release in September 2011. The outcome of this scientific review will be used to develop an adaptive management plan for the Gavins Point Dam spring pulses to guide future changes to the research, monitoring and evaluation program and management actions.

The Corps continues to believe that the current Master Manual provides the appropriate balance of benefits to all authorized project purposes, fulfills our

treaty and trust obligations to the basin Tribes, and complies with all Federal law, including the Endangered Species Act.

The Corps takes its role very seriously in operating the Missouri River Reservoir System, and strives to provide an open and transparent decision making process for our vast array of stakeholders. If you have any questions, please feel free to contact me at (503) 808-3700, or Ms. Jody Farhat, Chief of Missouri River Basin Water Management Division, at (402) 996-3840.

Sincerely,
John R. McMahon
Brigadier General, US Army
Division Commander

[REDACTED] NWO

From: [REDACTED] NWD
Sent: Wednesday, March 30, 2011 10:08 AM
To: [REDACTED] NWO; [REDACTED] NWD02; Farhat, Jody S NWD02; [REDACTED],
[REDACTED] NWO; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02;
[REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED] NWD02;
[REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWO; [REDACTED] NWO; [REDACTED]
[REDACTED] NWO; [REDACTED] NWO; Blechinger, Erik T NWO; [REDACTED] NWD;
[REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWK;
[REDACTED] NWD; [REDACTED] NWK; [REDACTED] NWK; [REDACTED]
NWO; [REDACTED] NWO; [REDACTED] NWK; [REDACTED] NWK; [REDACTED]
NWO; [REDACTED] NWO; [REDACTED] NWK; [REDACTED] NWK; [REDACTED]
[REDACTED] NWO

Subject: FW: Missouri River Spring Rise (UNCLASSIFIED)
Attachments: PubBriefSIR2009-5201.pdf; ATT564237.htm

Importance: High

Classification: UNCLASSIFIED
Caveats: NONE

Fyi - A handful of you are already on Toms d list. Sorry for the repeat.

Katie Schenk and Des are on Toms the list. I will ask Erik to be added.

John

From: Tom & Karla Waters [mailto:waters4@ix.netcom.com]
Sent: Wednesday, March 30, 2011 8:53 AM
To: McMahon, John R BG NWD
Cc: Roe Melissa (Congressman Graves); Stundebek John & Carol; Colvin Eric (Howard Levee District #3); Famuliner George; Hawkins Garrett (MO Farm Bureau); Vandiver Perry; Shirley Steve; geibpallets@yahoo.com; Stundebek Matt; Frazier Jenny (Missouri AGO); Heil Nelson; Marshall Gary (MO Corn Growers); Spickert Donna (Congresswoman Hartzler); Kay Morris; Comodeca Mike; Padgett Darrel; Endsley Art & Christie; Oberdiek Gary; Wiedemeier Dan; Kerperin Kevin & Bob (Osage River); LePage Bill; Guier Nelson; Kirby Russ & Marcia; Dailey P.E. Steve (Fairfax Drainage District); Nölker Barb (Ray Co Farm Bureau); Kirby Karen; Alexander Terry (Consolidated North County LD); Dowdy Larry (Little River Drainage District); Duensing Doug & Carol; Engemann Dan (Congressman Luetkemeyer); Gooch Don; Gill John; Nail David; Lay Bill; Taylor Steve; Williamson John; [REDACTED] NWK; Lucietta Don (Senator Blunt); Matousek Mike (Congressman Graves); Stones Harold (Senator Roberts); Bohl Eric (Congresswoman Hartzler); Connor Jeffrey (Congresswoman Emerson); Huston John P.; Cothen Joe (EPA Region 7); Hafemeister Mary (Lower Chariton); Zeysing Robert H.; bmillerjr@emissourian.com; Weber Alan; Monks Janie (MO DNR); Beacom William; Meyer Steve; Leimkuehler Doris; Muench, Lynn M LRP; Fletcher W.C.; kctv@kctv5.com; [REDACTED] NWD; Jorns, Byron COL HQDA; Poldberg Mindy (Iowa Corn Growers); Ebersole Atalie (Congresswoman Emerson); Hockemeier Max; Gauthier Vincent (KC Port Authority); Hofbauer, Germaine HQ02; Gibbs Joseph; Wright Derry; Hershey Harry; Townsend Deanne; [REDACTED] NWK; Klingner Michael; Curtis Don (HDR); Coats Derek (Senator Blunt); Reeder Brenda; Richards Eugene (KTIS Radio); Jenkins Ronald; Meyerkorth Richard; rcityhall@aol.com; Russell McKinney (Ham Hill

Farms, Inc.); Mahoney Larry; Voss Terry; Flores J.R. (NRCS); Richmond Vicki (Missouri River Relief); Appleton Seth (Congressman Luetkemeyer); Twyman Maria Antonia; LePage Paul W.; Lyon Ashley; Hayes Rick; Twyman Mike; Davis Paul; Kuenzel Danny; Copeland David; Humphreys David; Bryan Bill (MO DNR); Keisker Larry; Stewart Kay (Congresswoman Hartzler); Shaw Tim; Gibson Ron; Asbury Randy (CPR); Westbrook Rick; Johnson Glenda; Ellis Lauren (Congressman Akin); Rhode Paul (Midwest Area Waterways, Inc.); Anderson, G Witt NWD; Ryland Utlaut (Mid-Missouri Energy, LLC); [REDACTED] NWK; Samson Maryann; Cruse, Lester External Stakeholder; Marble Gary (Congressman Luetkemeyer); Hurst Blake; Dickey Scott; Little Erin (KMBC-TV); Johnson Jerilyn; Banks David (L488); Jasper John; Brockmeier Joe; Blakley Ron; Hurst Blake (Missouri Farm Bureau); Edwards Jim; McManus John (MO AGO); Drew John (DNR); Hockemeier Farrell; Johnston, Paul T NWO; Thomas Joe; Pozzo John; Olin Arvin & Joan; Hartnett Katy (Congressman Carnahan); oem@kcmo.org; Brown Chris (Congressman Luetkemeyer); [REDACTED] NWO; Gerlach Travis; Brockmeier Michael; Plattner Aaron; Dewey Dave (River Marine Enterprises); Sieck David; Roettger Eugene (MO Valley LD); Casner Kevin (Sugartree LD); Blair Dennis; Vanwinkle Terry; Imgarten Dave (Imgarten Farms); Rogers Mac (Ray County Ambulance District); Wyatt Charles; Walton James (KCMO Water); Maxwell Wes (FM Global); Diamond Kim; Schwoeppe Kenneth; Kuhler Steve; [REDACTED] MVS External Stakeholder; Dohrman Ben (Bartlett Grain); Macy Babette (Kissick Construction); Lyberger Jesse; Thorson John; Myers, Larry L NWK; Diederich Stephen (Wilton Landowner's L&D); Moran Medina (WCI); Grisham Becky (MO Corn Growers); Kinne Zach (Senator Blunt); Newham Kent (Ray-Carroll County Grain Growers); Pogge Frank (DFP Environmental Consulting, LLC); Disinger Katy (Senator McCaskill); Moyer Nathan; Cassidy Dan (Missouri Farm Bureau); Hall Cindy (Senator McCaskill); johnsonsj@centurytel.net; Blair, Amy E NWK; Sloniker Barbara; Phillips Tim (Ray Carroll); Perry Meagan; news@nbcactionnews.com; Wildberger Dottie (Halls Levee Distrit); Manson Ann Edwards; Ratto Mark (Congressman Graves); [REDACTED] NAD; Hommes Harold; Buckallew Adam (MO Soybean Assn.); Owsley Chuck; Farley Mike (Consolidated North County LD); Clark Scott; Berkley Jim (EPA); Bacon Bob; [REDACTED] NWK; Bledsoe Ron (Saline County LD); Leeds Terry (KCMO Water); Engemann Steve; Ramsey Mark (County Bank); Jackson Bill; Merensmeyer Wade (Ray-Carroll); Stone Mike (KMZU Radio); [REDACTED] NWO; Livers Richard; Ott Douglas (County Bank); Woolley Leslie (Congressman Cleaver); Luther Tim; Lewellen Rodney (Mi-De LD); Elsbury Angela; Eagleton Tim (FM Global); Turley Sherrie (MODOT); Smart Peggy; Berendzen Buffy (MO Dept of Ag); Shorr David; Poche David; Goodwin Clive; Haldeman Jeremy (Congressman Carnahan); Sandidge Brent; [REDACTED] NWK; Vickers Kyle; Stegmann Michael D.; Knickmeyer Mary; Fletcher John; Wells, Mike MVS External Stakeholder; Robinson Kim; Womack Abner; Vincze Robert; info@waterways.org; Madgett John; Vandiver Gary; Melzer Gary; kmbcnews@gmail.com; Kipping David; Kircher Lisa; Twyman Tim; Schwoeppe Suzanne; Jeff@concordiaimplement.com; Attema Menno; Littleton Bob; [REDACTED] NWK; [REDACTED] David (Ray Co. LD #2); Popelka Aaron (Senator Moran); Wolfe Alan (ESI Contracting Corp); Wheeler Jim; Davis Art; Nordwald Mike (Ray-Carroll); Gloe Harold; Klenklen Chris (MO Dept. of Ag); Rudy James (Jay) USACE Napoleon; Walley George; Noll Rich (KCMO Water); Waters Linda; Maczuk Bill; Binder Darwin (L497); Nikodum Don; Durham-Aguilera, Karen L HQ02; Dunn Thomas (Gateway Arch Riverfront); Glosemeyer Maurice; Moody Wayne; Jacob Scott; Johnson Jerilyn; newsdesk@kctv5.com; Rea Donald (St. Louis Water); Foreman Jarrell (Ray County FSA); Perry Ernie (MODOT); Daniels-Murray Larry (D Bar M LLC); Perry Bobby; Warren Beth; [REDACTED] NWK; [REDACTED] LRP; Stegmann Richard (Lange-Stegmann); Townsend Tom; Bell Tom (USFWS); McMullen Dalla; Perry Bob (Perry Ag Lab); Truesdale Sharmon (Waterways Council, Inc.); Kaiser Glenn & Nancy; Noltensmeyer John (Montgomery County); Armstrong Mike (WaterOne); Buhrmester Rex; Knopf David; Schupp Mark; Morgan Steve; Markt Carla; Tiemeyer Paul (Rock Port); Jacoby Karin; Boss Naomi (Congressman Graves); Keck J. (St. John's Levee & Drainage); news@kmbc.com; Arnold Mike; Klippenstein Brian (Senator Blunt); Dukes Corey (Senator McCaskill); Forck Kelly (Cole Junction LD); Vinning Rob; Howlett David (Price Howlett); Dorsey Darrell (BPU); Horgan Tom (Ameren); Perry Kristin (ALOT); Henry Peter (Senator Blunt); [REDACTED] NWK; Zimmel Peter; Susan@MissouriRuralServices.com; O'Dell Joyce; Dieckmann Phillis (City of Levasy); Fisher Sherry (AG Koster); Schluter C.C.; Manson Gary (Brunswick-Dalton LD); Paulsmeyer Duane; Elmore John; Nelson-Stastny Wayne (USFWS); Nance Bob; news@wdaftv4.com; Meyer Randy; [REDACTED] NWK; Carr Mark; Cieslik Larry (HDR); Seigfreid Paul; sswindler@mfa-inc.com; Stucker Marcus; [REDACTED] HQ02; Gentry Allen; Human David; Waters Glen; Smith

Katie; [REDACTED] NWK; Schenk, Kathryn M NWO; Nail Jeff; Klingner Diaz Karla; Price Marge (Price Howlett); Imgarten Barry; McNelly Josh (Ray-Carroll Crop Insurance); Sullivan Tade; Payne Tom (Dean-Mizzou CAFNR); Hofmann, Anthony J COL NWK; Mitas, Jim MVS External Stakeholder; Dawson John; Massman John; Franken John(Attorney); McNeall Ron; Prenger Daniel (Prenger Farms); Porter Clark (Senator McCaskill); Hecox Rob; Slade Kathy; Johnson Sam; Davis Adam (Congresswoman Hartzler); Hoffman Linda(KCMO Water); Kucera Ron; Cowherd Emmalie; Waters Farms, Inc.; Holloway Leslie (MO Farm Bureau); Brennan Larry (Kaw Valley Drainage); Erfling Wilmer; Lucy Gary & Sandy; Blalock Steve; Meng Lanny; Fergason Roger; Jenkins Holly (Congressman Cleaver); Redmond Jeane (Z Bar Farms); Schlicht Mark(ESI Contracting Corp); Daniels Jimmy (Whitham Levee District); Hardecke Ron; Stock Tom; Alder Powers; Flickner Ryan (Senator Roberts); Trachsel Wayne (Chamois LD); Davids@Sydenstrickerimp.com; Campbell Billy (Goppert Financial Bank); Randy Asbury; Gebhardt Jeffrey (Lower Chariton); Manson Nicholas; Babb Robert; Munson Ross Carol; Williamson Bob (KCMO Water); Mayfield Ann; Ruch, Robert J COL NWO; Whitley Melvin; Fleming, Lisa HQ; Steele Brad; Proffitt Jim; Manson Phil (Brunswick-Dalton LD); Schrempf Tom; Schaffer John (Union Township Drainage District); Jorgensen Don; Stouffer Bill; Ludwig Dale (MO Soybean Assn.); Rouse Karen; Frakes Lanny; Blackwell Bill; Rehmeier Dean (Augusta Bottom Levee Protection Assoc.); McMurry Dave (UMIMRA); Clemens Jim; Fuhrman Dan; Farhat, Jody S NWD02; McNeall Raymond
Subject: Missouri River Spring Rise
Importance: High

Brigadier General John R. McMahon

Commander, Northwestern Division, USACE

Dear General McMahon:

The following quotes from the attached USGS document would indicate temperature and length of day are the keys to the spawning cue for the pallid sturgeon. More recent data indicates very limited pallid sturgeon spawning has occurred in associated with a spring rise and spawning has also occurred without a rise. Data from the shovel nose sturgeon also indicates spawning occurs with or without the rise. This would indicate the spring rise is not necessary to prompt pallid sturgeon spawning.

Recent articles in the news media have state the spring rise prompts the pallid sturgeon to spawn. The media uses the Corps of Engineers as sources for their stories. I believe there is no conclusive data that indicates the spring rise cues the pallid sturgeon to spawn. We continue to ask for data from the US Fish and Wildlife Service which supports the spring rise theory and to date still have never been given any documentation supporting the Spring Rise science experiments.

I understand the data below is fairly new (2009) and there is still much to be learned about the pallid sturgeon's spawning. But, until there is scientific data available to support the spring rise, I hope your staff would be more careful with the information distributed to the public. Stating the spring rise prompts spawning is not accurate and at best it is still just an unsubstantiated hypothesis. With the lack of scientific evidence to prove otherwise, a more accurate portrayal of the spring rise would be to refer to it as a test, trial or experiment called for in the USFWS biological opinion.

The USFWS, with their biological opinion, is forcing the Corps of Engineers to conduct or attempt to conduct two spring rises each year as nothing more than unfounded science experiments. There has been no data made available to support the theory the spring rise prompts the pallid sturgeon to spawn. I remain hopeful this dangerous and unwarranted action will soon be cancelled permanently. I appreciate the cancellation of the planned March rise and continue to pray the planned May rise will also be cancelled.

As always, I appreciate the position the USFWS has placed the Corps in with their demands for a spring rise and thank you for your service to our country and the people who live and work along the Missouri River.

Sincerely,

Tom Waters, Chairman

Missouri Levee & Drainage District Association

"While data are as yet limited on the rare pallid sturgeon, this study has successfully documented spawning in the mainstem Lower Missouri River from late April to mid-May at several locations, and under a wide range of geomorphic and hydraulic conditions.

Environmental factors such as temperature fluctuations or flood events may disrupt spawning migration patterns and possibly inhibit spawning."

"Spawning fish use areas of converging, turbulent flow with relatively high velocity and great depth, conditions that exist on the outside of most bends."

"The likely factors that advance spawning readiness and define the temporal window within which spawning occurs are length of day and water temperature."

"Existing discharge, temperature, and migration pattern data for shovelnose and pallid sturgeon spawning indicate a temperature thresh- old for spawning of 16 degrees Celsius, but do not indicate a specific migratory or spawning response to discrete flow pulses."

Associated Press (AP) - Pierre Bureau Pierre, SD 03/14/2011

Corps may drop March pulse on Missouri River

SIOUX FALLS, S.D._The Army Corps of Engineers said it might cancel the March surge of extra water meant to help an endangered fish in the Missouri River.

The so-called spring pulse below Gavins Point Dam is meant to replicate a natural spring rise that prompts the pallid sturgeon to spawn.

The corps said the two-day March pulse could be canceled if the river level is already high from spring runoff. The corps said implementing a second pulse planned for May also will depend on the river level.

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Omaha World-Herald - Online Omaha, NE 03/29/2011

No surge for pallid sturgeon - By David Hendee

Mother Nature is replacing the Army as the pallid sturgeon's cupid – at least temporarily.

The U.S. Army Corps of Engineers canceled plans to release a surge of additional water into the Missouri River to benefit the endangered sturgeon this month because of high flows in eastern South Dakota tributaries.

The melt of extensive Plains snowpack eliminated the need for a two-day surge, said Jody Farhat, chief of the Army Corps' water management office in Omaha.

Pallid sturgeon need higher spring flows to cue spawning and to link them to other areas of the river during their life cycle. The spring pulse from Gavins Point Dam, located on the Nebraska and South Dakota border, is meant to replicate a natural seasonal rise that prompts the species to spawn.

Pallid sturgeon are an ancient species protected by the Endangered Species Act.

The March pulse was to be 5,000 cubic feet per second minus the James River flow near its confluence with the Missouri upstream of Sioux City, Iowa. Monday's flow on the James River was nearly 25,000 cfs. The river is expected to remain high for the foreseeable future.

The Missouri already is above downstream flow limits set to reduce or eliminate farmland flooding at Omaha, Nebraska City and Kansas City, Mo.

A pulse also is scheduled for May. River conditions will be evaluated after May 1 to determine the feasibility and timing, Farhat said.

Classification: UNCLASSIFIED
Caveats: NONE

Understanding of *Scaphirhynchus* Sturgeon Life Cycle Improves

Recovery of the endangered pallid sturgeon (*Scaphirhynchus albus*) in the Missouri River depends on improved understanding of its life cycle and the ecological factors that contribute to its successful reproduction and survival. After four years of extensive, interdisciplinary studies of the rare pallid sturgeon and the more abundant and genetically similar shovelnose sturgeon (*S. platyrhynchus*) in the Missouri River downstream of Gavins Point Dam in Yankton, South Dakota, U.S. Geological Survey (USGS) scientists and their collaborators have expanded their knowledge of *Scaphirhynchus* sturgeon significantly. Their findings are reported in the new USGS Scientific Investigations Report 2009-5201, *Ecological Requirements for Pallid Sturgeon Reproduction and Recruitment in the Lower Missouri River: A Research Synthesis 2005–08*.

The report documents typical patterns of migration and spawning of pallid and shovelnose sturgeon. Reproductive females of both species typically swim upstream 10's to 100's of kilometers and spawn at the apex of their migration (fig. 1) while males may remain relatively stationary or migrate upstream to one or several spawning locations. Spawning of the

more abundant shovelnose sturgeon has been documented from March through August, and occurs at many locations spread over hundreds of kilometers of the Lower Missouri River and within tributaries. While data are as yet limited on the rare pallid sturgeon, this study has successfully documented spawning in the mainstem Lower Missouri River from late April to mid-May at several locations, and under a wide range of geomorphic and hydraulic conditions.

Environmental factors such as temperature fluctuations or flood events may disrupt spawning migration patterns and possibly inhibit spawning. Coordinated habitat studies indicate that migrating reproductive sturgeon use specific areas within available habitat with high variability of depth and velocity. Spawning fish use areas of converging, turbulent flow with relatively high velocity and great depth, conditions that exist on the outside of most bends (fig. 2).

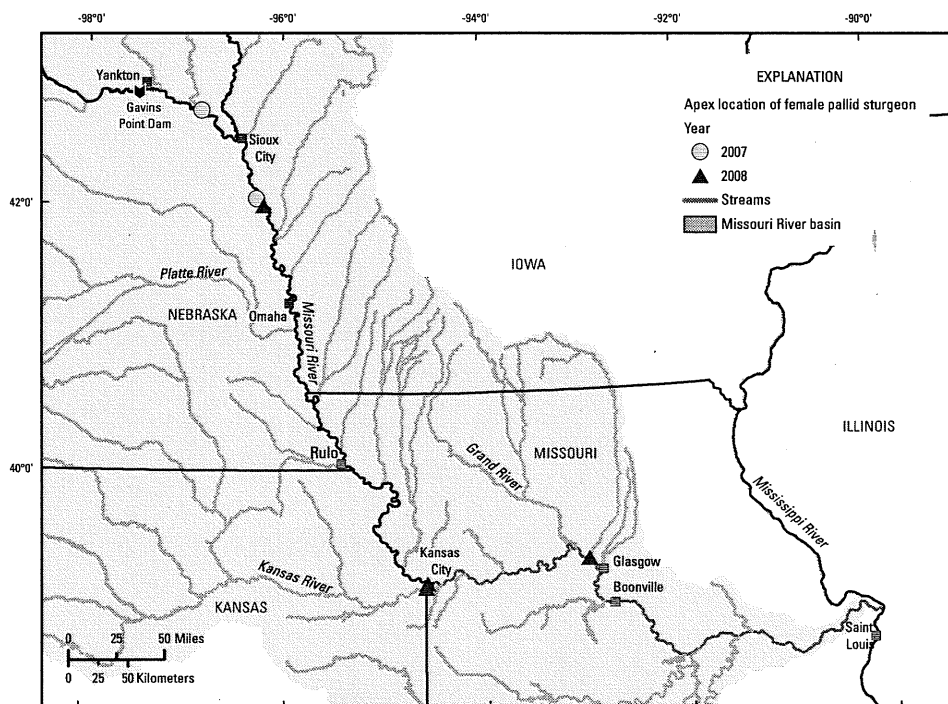


Figure 1. Maximum upstream location (apex) of telemetry-tagged pallid sturgeon in 2007 and 2008. All fish were in reproductive condition when implanted, were tracked to their presumed spawning location, then recaptured, and determined to have spawned.

Biologists believe that female sturgeon maturation and readiness to spawn are cued many months before actual spawning. The likely factors that advance spawning readiness and define the temporal window within which spawning occurs are length of day and water temperature. After migrating upstream, spawning is triggered when multiple conditions are met, including suitable water temperature, presence of reproductive males, turbulent flow, and coarse substrate. Existing discharge, temperature, and migration pattern data for shovelnose and pallid sturgeon spawning indicate a temperature threshold for spawning of 16 degrees Celsius, but do not indicate a specific migratory or spawning response to discrete flow pulses. Improved understanding of physiological indicators (blood hormones, egg maturation indices) provides critical links between fish reproduction and the river environment.

Although researchers have documented spawning of both wild and hatchery-reared pallid sturgeon, uncertainties remain about whether this spawning results in successful recruitment of progeny into the population at sustainable levels. Calculations of larval drift distances demonstrate that depending on flow velocities, channel width, and habitat complexity, many larvae spawned in the Lower Missouri River can be expected to drift into the Middle Mississippi River.

The research was conducted between 2005 and 2008 as part of the Comprehensive Sturgeon Research Program, an interagency collaboration between the USGS, Nebraska Game and Parks Commission, U.S. Fish and Wildlife Service, and the U.S. Army Corps of Engineers' Missouri River Recovery Program—Integrated Science Program.

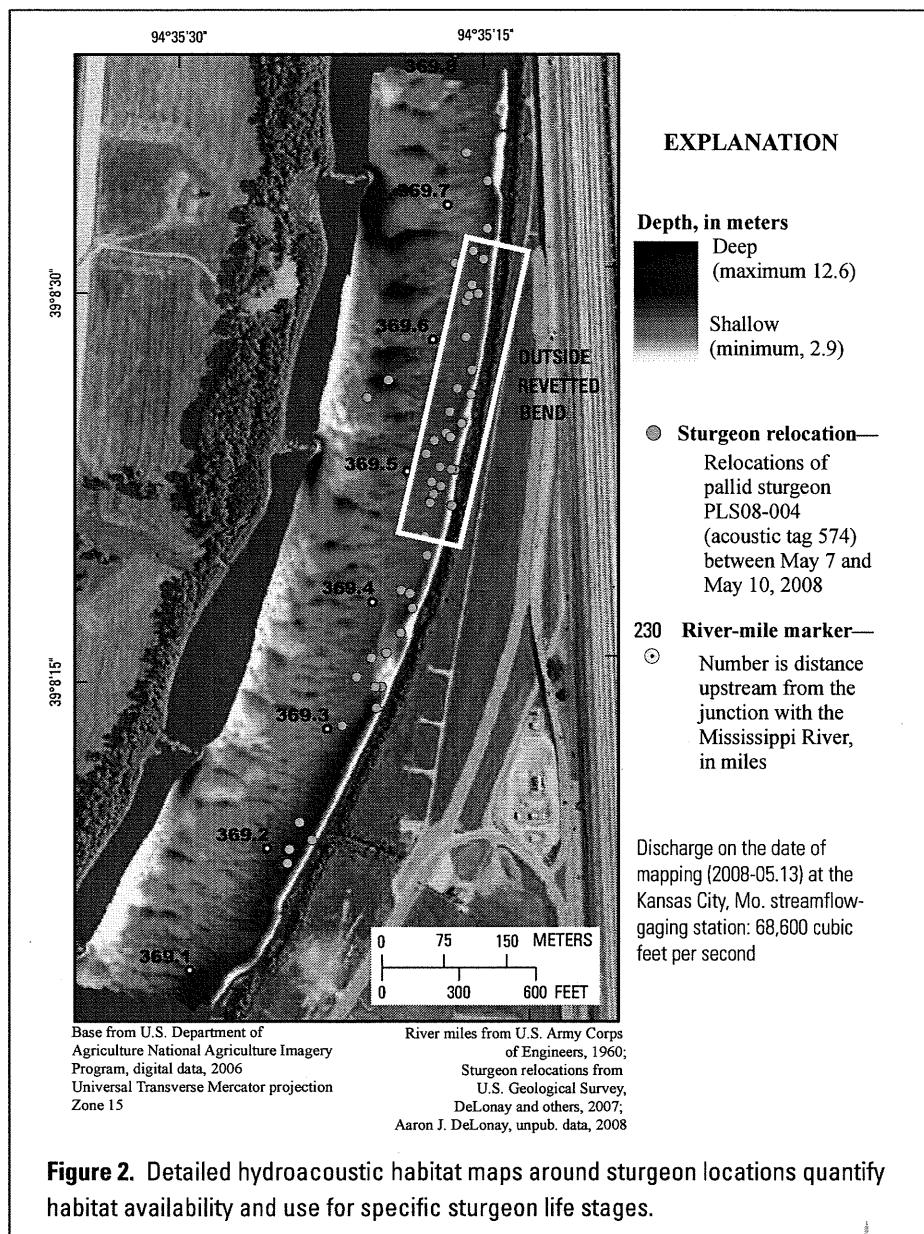


Figure 2. Detailed hydroacoustic habitat maps around sturgeon locations quantify habitat availability and use for specific sturgeon life stages.

Report Citation—DeLonay, A.J., Jacobson, R.B., Papoulias, D.M., Simpkins, D.G., Wildhaber, M.L., Reuter, J.M., Bonnot, T.W., Chojnacki, K.A., Korschgen, C.E., Mestl, G.E., and Mac, M.J., 2009, Ecological requirements for pallid sturgeon reproduction and recruitment in the Lower Missouri River—A research synthesis 2005–08: U.S. Geological Survey Scientific Investigations Report 2009–5201, 59 p.

Download the report from <http://pubs.usgs.gov/sir/2009/5201/>

For information—Aaron DeLonay

U.S. Geological Survey, Columbia Environmental Research Center
 4200 E. New Haven Road, Columbia, Missouri 65201
 adelonay@usgs.gov • 573-876-1878 • <http://www.cerc.usgs.gov/>

NWO

From: [REDACTED] NWD
Sent: Wednesday, March 30, 2011 9:19 AM
To: [REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWD02; Farhat, Jody S
NWD02; [REDACTED] NWO; [REDACTED] NWD02; [REDACTED]
NWD02; [REDACTED] NWD02; [REDACTED] NWD02; [REDACTED]
NWD02; [REDACTED] NWK; [REDACTED] NWK; [REDACTED] NWO; [REDACTED]
[REDACTED] NWO; [REDACTED] NWO; [REDACTED] NWO
Subject: FW: Corps Clippings - March 29, 2011 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Comment from the public. No reply necessary. Just for your info and awareness. Don is a retired USGS scientist and quite involved with MO RIV issues.

John

From: Don Jorgensen [<mailto:donjorg@longlines.com>]
Sent: Tuesday, March 29, 2011 5:59 PM
To: [REDACTED] NWD
Subject: RE: Corps Clippings - March 29, 2011 (UNCLASSIFIED)

Hi [REDACTED], yes I am still around. Thanks for the Corps Clippings.

I read the 2 clips on the March Spring Pulse. One by Omaha World Herald and the other by KCAU TV. Both articles said that the spring rise prompts the pallid sturgeon. Both were apparently using a Corps news release as a source. Please note there is no conclusive data set that indicates that a spring rise or pulse cues pallid sturgeon to spawn. The very limited pallid spawning data indicates that pallid spawning has occurred associated with a water pulse and has occurred without a pulse. This information suggests that the pulse is not necessary, not that it is necessary. Data from shovel nose sturgeon also indicates that spawning occurs with and without a water pulse. Thus, to state that the pulses prompt pallid sturgeon to spawn is misleading and or incorrect. It would be more accurate to state that the pulses are being conducted to determine if the unsupported hypothesis that the spring rise cues the pallid to spawn is accurate or a myth.

Thanks,

Don Jorgensen

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] HQ02
Sent: Thursday, March 31, 2011 4:28 PM
To: [REDACTED] NWD
Cc: [REDACTED] NWO; [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED]
NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED]
[REDACTED] NWO; [REDACTED] HQ; [REDACTED] NWK
Subject: RE: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thx. Perfect.

[REDACTED]
Chief, Future Directions Branch/Civil Works
[REDACTED] (desk)
[REDACTED] (cell)
[REDACTED] (fax)

-----Original Message-----

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 1:54 PM
To: [REDACTED] HQ02
Cc: [REDACTED] NWO; [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED] NWD;
[REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWO;
[REDACTED] HQ; [REDACTED] NWK
Subject: FW: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jennifer

Let me know if you need anything further.

[REDACTED]
=====

Q1. As you know, the record snowfall in Montana has created an unusually high flood risk this spring. Please describe the steps the Corps has taken to prepare for this flood risk?

A1. EVENT SUMMARY

08Feb11 - Omaha District Emergency Management initiated and held the annual coordination meeting with the State of Montana in Helena, MT. Discussions centered around USACE PL 84-99 Authorities and potential flood areas.

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11Mar11 - Request from State of MT to provide Advance Measures direct assistance for Nashua, MT

14Mar11 - Received a request for advance measures technical assistance from Blackfeet Nation near Browning, MT

17Mar11 - Provided a pump to Jordan, MT

18Mar11 - Provided sandbags to Saco, MT

Q2. What additional resources do you need to prevent the loss of life and property should these floods turn out as bad as anticipated?

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An emergency is a local responsibility to respond, then next the county and state. Federal assistance should never replace the state's rights and responsibility. First of all we provide technical assistance to both the state and locals when requested. This assistance is more along the lines of advice and recommendations. As we approach the larger melting of snowpack, Advance Measures are always something we consider. The process of doing an Advance Measures project is more involved than when we are in a flood fight activity. The Governor must request the advance measures and the district must do an expedited project information report, which then is approved by both Division and HQ, USACE. The report must show imminent threat and show the project can be completed before flooding starts.

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From: [REDACTED] HQ02

Sent: Thursday, March 31, 2011 9:44 AM

To: [REDACTED] NWD

Cc: [REDACTED] HQ

Subject: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

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As you know, the record snowfall in Montana has created an unusually high flood risk this spring. Please describe the steps the Corps has taken to prepare for this flood risk?

What additional resources do you need to prevent the loss of life and property should these floods turn out as bad as anticipated?

[REDACTED]

Chief, Future Directions Branch/Civil Works

202-761-4113 (desk)

[REDACTED] (cell)

[REDACTED] (fax)

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

Classification: UNCLASSIFIED

Caveats: NONE

NWO

From: Blair, Amy E NWK
Sent: Thursday, March 31, 2011 4:10 PM
To: Farhat, Jody S NWD02
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Jody, I read the rest of the email, which I didn't before I sent. Thanks for sending this on, I appreciate you trying to track it down.

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Thursday, March 31, 2011 4:04 PM
To: Blair, Amy E NWK
Subject: Fw: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

As requested.

Jody

----- Original Message -----

From: Vaughn, Ruth E NWD
To: Farhat, Jody S NWD02; Findley, Sheila E NWD
Sent: Thu Mar 31 13:36:27 2011
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Hi Jody,

Attached is a copy of the subject letter.

Best Regards,
Ruth

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Thursday, March 31, 2011 10:38 AM
To: [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] or [REDACTED], Could you provide the final Word file of the Pauley letter for our records. NWK has requested a copy for use in developing talking points.

Thanks,
Jody

-----Original Message-----

From: [REDACTED] NWD

Sent: Friday, March 25, 2011 7:14 PM
To: Farhat, Jody S NWD02
Cc: Pocevicius, Ann A NWD02; Eft, John H NWD
Subject: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO



Good Afternoon,

Attached is the response letter to Ms. Sara Parker Pauley, Director, Dept. of Natural Resources, Missouri regarding the spring pulses from Gavins Point Dam. Also want to let you know that John Eft had not been able to review it but BG McMahon said that was OK.

The original, to Ms. Sara Parker Pauley, will go out in Monday's mail.

I will mail you the yellow staffing sheet, if you'd like.

Best Regards,
Ruth


Executive Secretary
U.S. Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, OR 97209
Ph: 

Attachment Classification: UNCLASSIFIED
Attachment Caveats: NONE

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

NWO

From: Blair, Amy E NWK
Sent: Thursday, March 31, 2011 4:05 PM
To: Farhat, Jody S NWD02
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

Ah, I was hoping for a word file - I have a pdf. I was under the impression you wrote it, so I was hoping you'd have a copy. If not, don't worry about it. Thanks for the response.

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Thursday, March 31, 2011 4:04 PM
To: Blair, Amy E NWK
Subject: Fw: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

As requested.

Jody

----- Original Message -----

From: [REDACTED] NWD
To: Farhat, Jody S NWD02; [REDACTED] NWD
Sent: Thu Mar 31 13:36:27 2011
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

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[REDACTED]

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Sent: Thursday, March 31, 2011 10:38 AM
To: [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] or [REDACTED] Could you provide the final Word file of the Pauley letter for our records. NWK has requested a copy for use in developing talking points.

Thanks,
Jody

-----Original Message-----

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Cc: [REDACTED] NWD02; [REDACTED] NWD
Subject: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

Classification: UNCLASSIFIED
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Best Regards,
Ruth

[REDACTED]
Executive Secretary
U.S. Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, OR 97209
Ph: 503-808-3702

Attachment Classification: UNCLASSIFIED
Attachment Caveats: NONE

Classification: UNCLASSIFIED
Caveats: FOUO

Classification: UNCLASSIFIED
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Caveats: FOUO

Classification: UNCLASSIFIED
Caveats: FOUO

[REDACTED] NWO

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 1:36 PM
To: Farhat, Jody S NWD02; [REDACTED] NWD
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)
Attachments: Gavins Point Dam Letter to DNR-March 25, 2011.pdf

Classification: UNCLASSIFIED
Caveats: FOUO

Hi Jody,

Attached is a copy of the subject letter.

Best Regards,
[REDACTED]

-----Original Message-----

From: Farhat, Jody S NWD02
Sent: Thursday, March 31, 2011 10:38 AM
To: [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Response to DNR Director re. Gavins Point Dam (UNCLASSIFIED)

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Caveats: FOUO

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Thanks,
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-----Original Message-----

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Sent: Friday, March 25, 2011 7:14 PM
To: Farhat, Jody S NWD02
Cc: [REDACTED] NWD02; [REDACTED] NWD
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Best Regards,
[REDACTED]

[REDACTED]
Executive Secretary
U.S. Army Corps of Engineers
1125 NW Couch Street, Suite 500
Portland, OR 97209
Ph: [REDACTED]

Attachment Classification: UNCLASSIFIED
Attachment Caveats: NONE

Classification: UNCLASSIFIED
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Caveats: FOUO



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTHWESTERN DIVISION
PO BOX 2870
PORTLAND OR 97208-2870

MAR 25 2011

REPLY TO
ATTENTION OF

Missouri River Basin Water Management Division

Ms. Sara Parker Pauley
Director, Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

Dear Ms. Pauley:

Thank you for your letter dated March 15, 2011, requesting that the Corps of Engineers (Corps) forego implementation of the spring pulses from Gavins Point Dam. As you may know, it appears unlikely that a March pulse will be implemented due to high flows on the James and Missouri Rivers. A decision regarding the May pulse will be made based on observed and forecasted river conditions at that time. The Corps takes its role very seriously in operating the Missouri River Reservoir System, and strives to provide an open and transparent decision making process for our vast array of stakeholders.

The Final 2011 Annual Operating Plan, made available to the public in mid-December 2010, presented the Corps' intent to implement a bimodal spring pulse (March and May) from Gavins Point Dam in 2011. The bimodal spring pulse is in compliance with the Master Manual and is required to comply with the Endangered Species Act (ESA) and the 2003 Amended Biological Opinion (BiOp).

Safeguards to minimize the risk of downstream flooding due to the spring pulses were included in the 2006 revision to the Master Manual. These safeguards are termed "downstream flow limits" and are well below the channel capacity of the Missouri River. These flow limits are identical to the most restrictive of the flood control constraints presented in the Master Manual. Additional safeguards have been added. Under the current Master Manual, the Corps incorporates observed and anticipated precipitation into the Corps' river forecast to provide greater assurance that flows will remain below the downstream flow limits during the duration of the spring pulses. The Corps also has the option of reducing or eliminating the effect of the spring pulses on river stages below Kansas City if significant releases are being made from Corps tributary projects and if a temporary reduction in those releases would not cause undue risk to other areas.

I appreciate your comments related to the scientific basis for the spring pulses and highlighting recent research showing that hours of sunlight and water temperature, rather than flow, are the most likely proximate cue to induce pallid sturgeon spawning. The Corps vigorously supports the ongoing integrated research, monitoring, and evaluation program to identify the factors that may be limiting pallid sturgeon spawning and recruitment in the Missouri River. This work is being conducted by and for the Corps as part of the Missouri River Recovery Program.

Although much has been learned about the spring pulse and the pallid sturgeon during the previous several years, many uncertainties remain. To that end, an Independent Science Advisory Panel (ISAP) was established in January 2011 in partnership with the Missouri River Recovery Implementation Committee (MRRIC). The panel is comprised of six science advisors who will provide independent science support and technical oversight on specific topics. The initial topic selected for the ISAP is "Missouri River Spring Pulse and Adaptive Management".

The ISAP will review and provide recommendations to the Corps, U.S. Fish and Wildlife Service and the MRRIC on the expected outcomes of the Gavins Point Dam spring pulses. The panel will also review the metrics, monitoring, investigations and management actions, and provide recommendations on their potential refinement. The scope of the review includes:

- Examine the goals and objectives of the spring pulses
- Recommend metrics to assess the spring pulses
- Identify ecological uncertainties and risk
- Identify changes, modifications or additions to monitoring program
- Identify focused investigations/research needs
- Recommend data analysis and assessment methods
- Examine potential management actions to evaluate as part of an Adaptive Management Program

The final ISAP report is scheduled for release in September 2011. The outcome of this scientific review will be used to develop an adaptive management plan for the Gavins Point Dam spring pulses to guide future changes to the research, monitoring and evaluation program and management actions.

The Corps continues to believe that the current Master Manual provides the appropriate balance of benefits to all authorized project purposes, fulfills our treaty and trust obligations to the basin Tribes, and complies with all Federal law, including the ESA.

I understand the importance of the Missouri River to citizens in the State of Missouri and appreciate your commitment to raise these issues on their behalf. If you or your staff has any questions, please feel free to contact me at (503) 808-3700, or Ms. Jody Farhat, Chief of Missouri River Basin Water Management Division, at (402) 996-3840.

Sincerely,

A handwritten signature in black ink, appearing to read "John R. McMahon", with a stylized flourish at the end.

John R. McMahon
Brigadier General, US Army
Division Commander

[REDACTED] NWO

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 12:58 PM
To: Johnson, Joseph K NWD
Cc: [REDACTED] NWO; Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWO; [REDACTED] HQ; [REDACTED] NWK
Subject: RE: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks to everyone for the quick response!

-----Original Message-----

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 10:54 AM
To: [REDACTED] HQ02
Cc: [REDACTED] NWO; [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWO; [REDACTED] HQ; [REDACTED] NWK
Subject: FW: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED]
Let me know if you need anything further.

[REDACTED]
=====

Q1. As you know, the record snowfall in Montana has created an unusually high flood risk this spring. Please describe the steps the Corps has taken to prepare for this flood risk?

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-----Original Message-----

From: [REDACTED] HQ02

Sent: Thursday, March 31, 2011 9:44 AM

To: [REDACTED] NWD

Cc: [REDACTED] HQ

Subject: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Hi doug - can you give me a couple of sentences? thanks! Jen

Montana is facing a high flood risk this spring. The Milk River Basin has surpassed its' record snowfall amount with approximately 105 inches for the year. The current snow water equivalent maps are showing areas of 8 to 14" of snow water equivalent in the areas between Havre and Malta and areas of 1 to 6" of snow water equivalent between Malta and Wolf Point. Snow water equivalent is the amount of water in the current snowpack. The Corps has stated that given this data, there is a good chance Montana will see near record flooding if not record flooding this spring.

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[REDACTED]

Chief, Future Directions Branch/Civil Works

[REDACTED] (desk)

[REDACTED] (cell)

[REDACTED] (fax)

[REDACTED] NWO

From: [REDACTED] NWO
Sent: Thursday, March 31, 2011 12:28 PM
To: [REDACTED] NWD; [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED]
NWD; [REDACTED] NWD; [REDACTED] NWD
Cc: Campbell, Mike A NWD; Pfenning, John W NWO
Subject: RE: Quick question (UNCLASSIFIED)
Attachments: 2011_Montana_Flood_Prep_Fact_Sheet_03_31.pdf

Classification: UNCLASSIFIED
Caveats: NONE

All,

Here is a pretty good summary of our work in Montana. Let me know if you need anything else.

Thanks,
[REDACTED]

[REDACTED]
Chief, Readiness Branch
U.S. Army Corps of Engineers - Omaha District
1616 Capitol Ave., Ste 9000
Omaha, NE 68102
[REDACTED] Office
[REDACTED] Blackberry
[REDACTED]@usace.army.mil

-----Original Message-----

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 12:07 PM
To: [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD;
[REDACTED] NWO
Cc: [REDACTED] NWD; [REDACTED] NWO
Subject: RE: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED]
Jody said you would be the best to answer her question 1 on flooding below. We need a quick response.

Thanks
[REDACTED]

-----Original Message-----

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 9:48 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD
Cc: [REDACTED] NWD
Subject: FW: Quick question (UNCLASSIFIED)
Importance: High

Classification: UNCLASSIFIED

Caveats: NONE

Jody- can you provide a short answer for question 1 please? I know you are traveling. Will try to catch you on break from my meeting

Rick/John- can you work a short answer to number 2 please?

Joe- can you do a quick review of both for me please?

Would like to provide today please

Thanks
[REDACTED]

-----Original Message-----

From: [REDACTED] HQ02

Sent: Thursday, March 31, 2011 9:44 AM

To: [REDACTED] NWD

Cc: [REDACTED] HQ

Subject: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Hi [REDACTED] can you give me a couple of sentences? thanks! Jen

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[REDACTED]
Chief, Future Directions Branch/Civil Works

[REDACTED] (desk)

[REDACTED] (cell)

[REDACTED] (fax)

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

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Caveats: NONE



**US Army Corps
of Engineers®**

Omaha District

2011 NWO Montana Flooding Preparedness Fact Sheet

EXECUTIVE SUMMARY



Due to flood outlooks issued by the National Weather Service, indicating moderate to heavy snowpack conditions in the Milk River basin, initial coordination meetings with the State of Montana took place on 08 February 2011 at the State Emergency Operations Center in Helena, MT. Currently there is a high potential for moderate to major flooding in the Milk River basin.

CURRENT SITUATION

The Gallatin, Big Hole, and Upper Yellowstone Basins in Montana have a potential for minor flooding due to snowmelt. There is potential for moderate to major flooding due to snowmelt throughout the Lower Milk River Basin in Montana. The amount of snow water equivalent in these river basins is sufficient to cause flooding depending on how quickly the snow melts and any additional snow accumulation or precipitation. Due to the current forecasts, the Omaha District Emergency Management coordinated a joint coordination meeting with the State Emergency Management office on 08 February 2011. The meeting discussed USACE PL84-99 authorities and the procedures on how to request assistance from USACE as well as coordination, communication, and the path forward.

A request for Advanced Measures Technical Assistance from the State of Montana to determine their overall flood threat was received on 17 February 2011.

The areas of concern that were evaluated were: All cities in the Milk River Basin. The high potential areas are defined as areas in which the NWS has predicted major to record flooding and the current forecast indicates high potential for impacting critical infrastructures.

Technical assistance teams completed initial assessments on 11 March for 9 locations within the Milk River Basin. USACE Omaha District has recommended to the State of Montana to build temporary protective measures for the City of Nashua. USACE Omaha District has recommended to the State of Montana to continue to monitor the conditions at the following locations: Chinook, Dodson, Fort Belknap, Glasgow, Harlem, Havre, Malta, and Saco.

The District received a request for advance measures direct assistance for Nashua, MT from the State of MT. The project was approved by HQ. A contract was let on 30 March 2011 to provide a level of protection to a stage of 31.6' on the National Weather Service Gage.

Currently providing technical assistance to Blackfeet Nation near Browning, MT

Deployed a pump to Jordan, MT and sandbags to Dodson, MT, Saco, MT, and Ft. Belknap Tribe.

The Crisis Management Team has solicited potential volunteers. Flood fight teams participated in internal USACE flood fight training on 23 Feb 2011 as part of the USACE preparations.

RESOURCES AVAILABLE

- \$100K in PL84-99 advance measures technical assistance funds have been granted from HQ.
- \$375K in PL84-99 advance measures direct assistance funds have been granted from HQ.
- Resident Ice Expert along with additional support from U.S. Army Cold Regions Research and Engineering Laboratory (CRREL) to support ice jam technical assistance requests
- Sandbags: 2,700,000

- Blanket Purchase Agreement in place for acquiring additional Sandbags and poly
- Pumps: 23
- Poly Rolls/Plastic: 288
- Hescos: 20,295 LF
- Rapid Deployable Floodwall(RDFW): 500 LF
- Portadam: 1350 LF
- Ft. Pack Project Office – Ft. Peck, MT - 232,000 sandbags and 2 pumps

EVENT SUMMARY

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CURRENT PL 84-99 FLOOD REDUCTION PROJECTS IN THE STATE OF MT

Beaver Creek Flood Control Project, Saco, MT – The project consists of a system of approximately 10,200 feet of levees which, operating in conjunction with the railroad embankment and a county road embankment, encompassing the town of Saco. Channels were improved as part of the project, there is a storm water pumping station and a sandbag closure where levee crosses US Hwy. 2. In a study conducted by the Corps in 1980 it was determined that the SPF discharge had increased from 21,000 cfs to 29,700 cfs. Lowest degree of protection is along the 500 foot of the south levee & provides approximately a 50 year flood protection with 2 feet of freeboard – the remainder of the south levee provides approximately 100 year flood protection with 2 feet of freeboard. The north levee provides approximately 100 year flood protection with 2 feet of freeboard. The project protects the city of Saco, MT.

Milk River Flood Protection Project, Havre, MT – The project consists of approximately 3.9 miles of levees on both banks of the Milk River. There are two sandbag closures located on the south levee across the Burlington Northern RR tracks. The project contains 2 pumping stations and approximately 10 drainage structures. There are intake and outlet channels for the drainage structures, the connecting ditch from the abandoned Milk River Channel to Bull Hook Creek and the Milk River Channel. The project is designed for 3 feet of freeboard above flood discharge of 20,000 cfs. The project protects the city of Havre, MT along with the companion Bull Hook Unit.

Milk River, Bull Hook Unit and Scott Coulee Dams, Local Flood Protection, Havre, MT – The projects consists of an earthen dam across Scott Coulee with an overflow channel to Bull Hook Creek, an earthen dam across Bull Hook Creek with the spillway emptying into the diversion channel and structures necessary to direct large flows around Havre, MT to the Milk River. Dike #3, which is part of the Bull Hook Unit, acts as a levee to exclude Milk River floods from improved areas of Havre. The Bull Hook Unit was designed to control floods up to about 150 percent of the maximum of record with a maximum release of 20 cfs thorough the conduits without spill through the spillway notch. During normal stages in the Milk River, the spillway design flood, approximately 10 times the size of the maximum flood of record, could occur with Bull Hook, Scott Coulee and the Lower Diversion Dams full to spillway crests and could be passed to the Milk River without causing flooding to Havre. Both the Bull Hook Unit and the Scott Coulee Dams protect the city of Havre, MT.

Milk River Flood Protection Project, Glasgow, MT - The project consists of approximately 12,325 feet of levee, the Milk River and Cherry Creek channels, and drainage structures. The project was designed to provide

protection of approximately 57,000 cfs from the Milk River and approximately 3,000 cfs from Cherry Creek. The project protects the city of Glasgow, MT.

Milk River Flood Protection Project, Malta, MT – The project consists of approximately 1900 feet of levee, a 1265 feet of floodwall, drainage structures, a 120 foot closure structure, and an approximately 400 foot drainage ditch. The project protects against a design discharge related to a 200 year flood event. The project protects the City of Malta, MT.

Sun River Flood Protection Project, Great Falls, MT – The project consists of 6 miles of levees with tie backs on the left bank upstream of the Sixth Street Bridge and extends north across Crescent Drive and then parallels Crescent Drive to the railroad embankment which connects the levee system to high ground. The Watson Coulee part of the project consists of two 84-inch RCP approximately 4,700 feet long and a 3,100 foot long interceptor ditch and a 2,550 foot long embankment that conveys the flows to the Sun River and also serves as interior drainage structures for the protected area. There are two sandbag closures. The levee provided protection against a design discharge of 65,000 cfs plus 3 feet of freeboard. The Watson Coulee drainage provides protection against a design discharge of 1,450 cfs plus 2 feet of freeboard and is based on providing protection against the 100 year flood. The drainage area is 1,927 square miles. The project protects the city of Great Falls, MT.

Sun River and Muddy Creek, Flood Control Project, Vaughn, MT – The project consists of approximately 2.48 miles of levees, drainage and irrigation structures exist through the levee to pass interior drainage and irrigation water and a 1450 foot minor channel improvement on Muddy Creek. Approximately 1,000 feet of a county road was raised & serves as part of the levee system. The project was designed to provide protection from Sun River Floods of 65,000 cfs and Muddy Creek floods of 9,500 cfs with a minimum freeboard of 3 feet. The project protects the city of Vaughn, MT.

Yellowstone River Flood Protection Project, West Glendive, MT – The project consists of a system of approximately 8,880 feet of levees which operate in conjunction with a railroad embankment. The project also has a 1,100 foot Dry Creek Diversion Channel and drainage structures. The project was designed to provide protection from the Yellowstone River open water floods of 200,000 cfs with a minimum of 3 feet of freeboard. The project protects the area on the north, east and south sides of the city of West Glendive, MT.

Yellowstone River Flood Protection Project, Forsyth, MT – The project consists of approximately 2.5 miles of levee, channels, drainage structures, 2 sandbag closures, a 287 foot long concrete floodwall, and a 71 foot long retaining wall. The project protects against a peak flood of 140,000 cfs from the Yellowstone River and protects the city of Forsyth, MT.

CURRENT NON-FEDERALLY BUILT (BUILT BY OTHERS) PL 84-99 FLOOD REDUCTION PROJECTS IN THE STATE OF MT:

Yellowstone River, Glendive, MT – The project consists of approximately 4,635 feet of levee, and drainage structures. The levee provides approximately a 50 year level of protection with 3 feet of freeboard. The levee protects approximately 40 acres of farmland, and 12 acres of residential homes. It is operated by the Cottonwood Grove Levee Association.

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Governor: Brian Schweitzer(D)

Senators: Max Baucus(D) and Jon Tester (D)

Representative: Dennis Rehberg(R)

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[REDACTED] NWO

From: Clarke, Doug A NWD
Sent: Thursday, March 31, 2011 12:05 PM
To: [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD
Cc: [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Thanks- we need to get to Joe for a quick review by 10:30

Thanks for pushing. Learned it was for the hearing today

-----Original Message-----

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 10:04 AM
To: [REDACTED] NWD; Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD
Cc: [REDACTED] NWD; [REDACTED] NWD
Subject: RE: Quick question (UNCLASSIFIED)

I talked to [REDACTED] and he is preparing an EM response.

-----Original Message-----

From: [REDACTED] NWD
Sent: Thursday, March 31, 2011 9:48 AM
To: Farhat, Jody S NWD02; [REDACTED] NWD; [REDACTED] NWD; [REDACTED] NWD
Cc: [REDACTED] A NWD
Subject: FW: Quick question (UNCLASSIFIED)
Importance: High

Classification: UNCLASSIFIED
Caveats: NONE

Jody- can you provide a short answer for question 1 please? I know you are traveling. Will try to catch you on break from my meeting

Rick/John- can you work a short answer to number 2 please?

Joe- can you do a quick review of both for me please?

Would like to provide today please
Thanks
[REDACTED]

-----Original Message-----

From: [REDACTED] HQ02
Sent: Thursday, March 31, 2011 9:44 AM
To: [REDACTED] NWD
Cc: [REDACTED] HQ
Subject: Quick question (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Hi [REDACTED] - can you give me a couple of sentences? thanks! [REDACTED]

Montana is facing a high flood risk this spring. The Milk River Basin has surpassed its' record snowfall amount with approximately 105 inches for the year. The current snow water equivalent maps are showing areas of 8 to 14" of snow water equivalent in the areas between Havre and Malta and areas of 1 to 6" of snow water equivalent between Malta and Wolf Point. Snow water equivalent is the amount of water in the current snowpack. The Corps has stated that given this data, there is a good chance Montana will see near record flooding if not record flooding this spring.

Question

As you know, the record snowfall in Montana has created an unusually high flood risk this spring. Please describe the steps the Corps has taken to prepare for this flood risk?

What additional resources do you need to prevent the loss of life and property should these floods turn out as bad as anticipated?

[REDACTED]
Chief, Future Directions Branch/Civil Works

[REDACTED] (desk)

██████████ (cell)

██████████ (fax)

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWD02
Sent: Thursday, March 31, 2011 11:17 AM
To: Farhat, Jody S NWD02
Subject: RE: Vegetation Removal at RM 826.5 Complex (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Jody,

[REDACTED] called today to see if we could raise Gavins Pt up to 1207.5 or 1208 to aid in the vegetation removal at this site. They feel they will have trouble with the landing craft at the current elevation, and would like about 3-4 days at the higher elevation. They'd like to do the work as soon as possible (before birds start to arrive). I told him we would discuss it. Apparently they are having trouble with minks on this island and want to do the removal. One of the other options is to get a contractor to see if they can trap the mink (which may be difficult).

[REDACTED] and I discussed, and at this point in the year, we are not really in favor of having the pool higher. Also, it would require some fairly big adjustments in the Fort Randall release. Doug's wondering if there's other ways they can accomplish the work. We can discuss on Monday if you'd like.

Mike

-----Original Message-----

From: [REDACTED] NWO
Sent: Thursday, March 31, 2011 10:28 AM
To: [REDACTED] NWD02; Farhat, Jody S NWD02; [REDACTED] NWD02
Cc: [REDACTED] NWO; [REDACTED] NWO
Subject: Vegetation Removal at RM 826.5 Complex (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Hi All,

[REDACTED] I decided to follow up our phone call this morning with the attached pdf showing the RM 826.5 complex, the site of the proposed vegetation removal work and the proposed duration for raising Lewis & Clark Lake. I will be out of the office beginning at 11:30 today, but will be in the office all day tomorrow. If you have any questions, you can contact [REDACTED] at [REDACTED].

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

[REDACTED] NWO

From: [REDACTED] NWO
Sent: Thursday, March 31, 2011 10:28 AM.
To: [REDACTED] NWD02; Farhat, Jody S NWD02; [REDACTED] NWD02
Cc: [REDACTED] NWO; [REDACTED] NWO
Subject: Vegetation Removal at RM 826.5 Complex (UNCLASSIFIED)
Attachments: 826.pdf

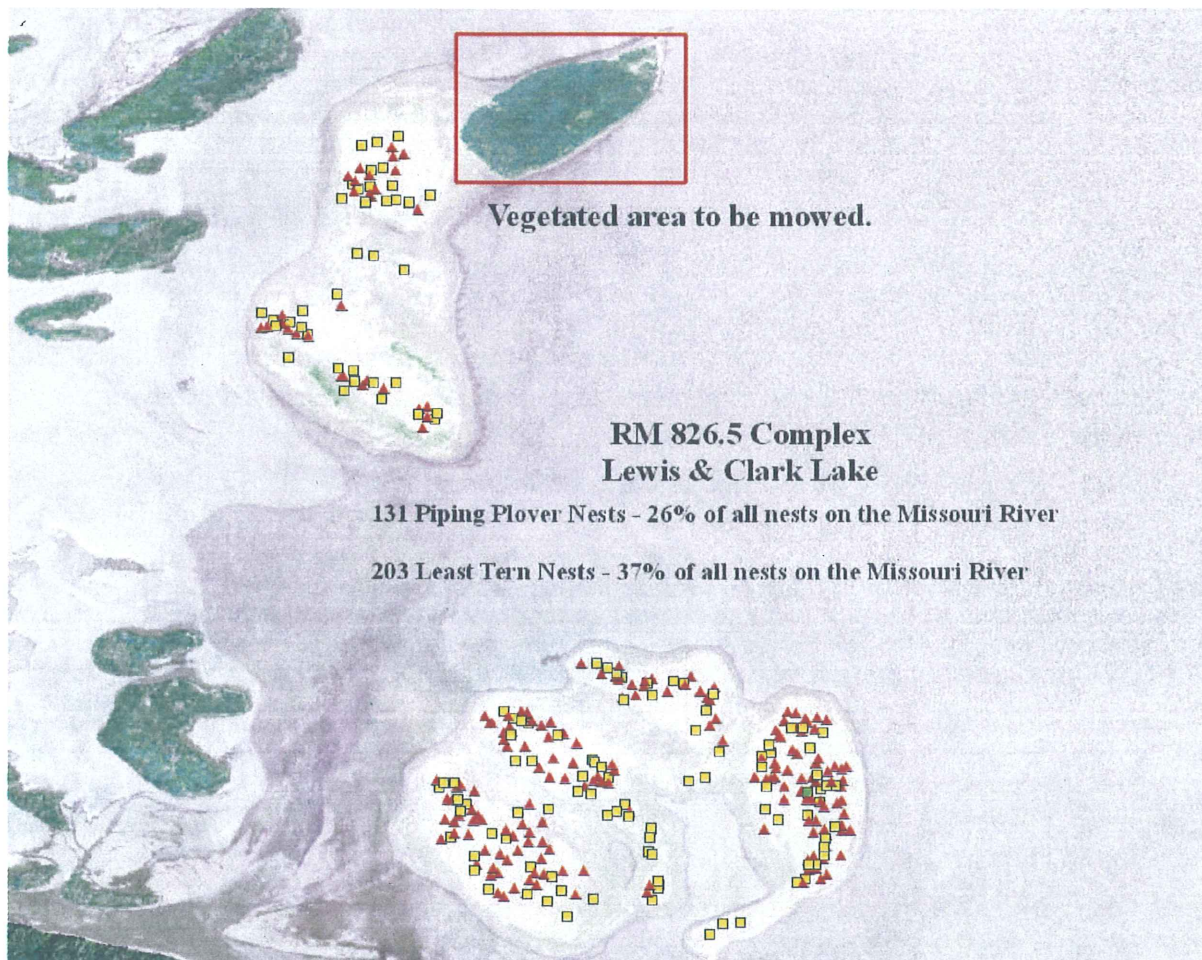
Classification: UNCLASSIFIED
Caveats: NONE

Hi All,

[REDACTED] I decided to follow up our phone call this morning with the attached pdf showing the RM 826.5 complex, the site of the proposed vegetation removal work and the proposed duration for raising Lewis & Clark Lake. I will be out of the office beginning at 11:30 today, but will be in the office all day tomorrow. If you have any questions, you can contact [REDACTED] at [REDACTED].

[REDACTED]

Classification: UNCLASSIFIED
Caveats: NONE



The above photograph shows the RM 826.5 complex in 2010. The area to be mowed is shown within the red rectangle. This area has harbored mink which has reduced productivity on the North Island. In 2009 the fledge ratios for the North Island was 0.17 for the terns (106 adults, 9 fledglings) and 1.24 for the plovers (50 adults, 31 fledglings) while on the South Island the fledge ratios were 1.44 for the terns (100 adults, 72 fledglings) and 2.25 for the plovers (70 adults, 79 fledglings). Trapping was tried in 2009 but no minks were captured. In 2010 a predator fence was placed along the boundary between the vegetated and non-vegetated zones of the North Island and two mink were captured. Despite that success the fledge ratio in 2011 for the North Island was 0.05 for terns (40 adults, 1 fledgling) and 0.70 for the plovers (40 adults, 14 fledglings). On the South Island the fledge ratios were 1.21 for the terns (224 adults, 136 fledglings) and 1.44 for the plovers (112 adults, 81 fledglings).

As the above data shows, we had a high proportion of both least tern and piping plover nesting on this complex. With the high runoff forecast for 2011 I would expect the use of this area to be very high by both species.

At the current lake elevation of 1206.0 msl equipment needed to remove the vegetation cannot be off-loaded on the North Island. When the lake was at 1207.5 msl landing spots were available on the island. The Gavins Point staff is requesting that the lake be brought up to at least to elevation 1207.5, but would prefer an elevation of 1208.0, by noon on Tuesday April 5 and that this elevation be maintained until noon on Thursday, April 7. If this is not possible, they request that the lake be held at 1207.5 or 1208.0 until noon on Wednesday, April 6.

The alternative to removing the vegetation would be to again try trapping and/or shooting the mink. (In 2010 USDA trappers spent two nights spotlighting the North Island but never saw any mink.)

[REDACTED] NWO

From: Don Jorgensen [REDACTED]
Sent: Thursday, March 31, 2011 9:38 AM
To: Farhat, Jody S NWD02
Subject: Some Questions Related to ISAP Webinar, 28 Mar 2011

. In reference to Gavins Point Spring Rise. In the years that a spring rise (dual pulse) has been attempted, it wasn't always possible to create a one or both of the pulses that would have been created by releases from Gavins Point Dam. Could you please make a table or list of what happened each year? Please include the March as well as the May pulses. Please note if there wasn't a created pulse was there was a 'natural' pulse in the hydrograph that met or exceeded the criteria that the pulse that would have been created if necessary from Gavins Point releases.

If it unclear what is needed please contact me.

(There seems to be an inference from many that pulses were just ignored.)

Thanks,

Donald G. Jorgensen PE

[REDACTED]

Jefferson

SD 57038-6870

Ph;

[REDACTED]

[REDACTED] cell

Email: donjorg@longlines.com